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MARCHIONESS OF LONDONDERRY.

THE
CANADIAN HORTICULTURIST.

VOL. XI. 1898. No. 1.

SEVERAL GOOD ROSES FOR OUR PROVINCE.

I WILL not have the mad clytie
Whose head is turned by the sun;
The tulip is a courtly queen,
Whom therefore I will shun;
The cowslip is a country wench,
The violet is a nun;
But I will woo the dainty rose
The queen of every one.

The pea is but a wanton witch
In too much haste to wed,
And clasps her rings on every hand;
The wolf's bane I should dread:
Nor will I dreary rose marye
That always mourns the dead;
But I will woo the dainty rose
With her cheeks of tender red.

—HOOD.

Some time ago reference was made to a trip to Fonthill, and the pleasure we took in comparing the roses there with some on our own grounds at Grimsby. We now proceed to redeem our promise that we would engrave some of our photographs of several satisfactory varieties.

Our frontispiece is a fine representation of a new rose, a fine white hybrid perpetual, recently sent out by Messrs. Dickson & Sons, the Irish rosarians, who have already become famous for originating that beautiful rose Margaret Dickson. The *Marchioness of Londonderry* is this described: Flowers of great size, perfectly formed, and carried on stout stems; color, ivory-white; petals of great substance, shell-shaped and reflexed; free flowering, highly perfumed; growth vigorous and foliage very fine, we may say mildew proof.

FIG. 1258.—MARGARET DICKSON. (*Reduced.*)

By favor of Messrs. Ellwanger & Barry we give a cut of *Margaret Dickson*, because there was no rose in the collection which seemed to give better satisfaction, both for health, free blooming, and beauty of flower. They say of it: "We have had this superb rose growing for several seasons, and there seems to be no doubt that it will be one of the best white hardy roses. Of magnificent form; white with pale flesh centre; petals very large, shell-shaped, and of great substance; fragrant; foliage very large, dark green; a very strong vigorous grower."

FIG. 1259.—CRIMSON RAMBLER. (*Reduced.*)

The rose which most interested us at the Fonthill Nurseries was a novelty from Japan, the *Crimson Rambler*, a cut of which has also been furnished us by the same firm. Of course the individual bloom was not large, nor striking, but its clusters are simply marvellous. Even in the nursery rows the young bushes were loaded heavily with numerous clusters, while the vigor of the shoots surpassed that of any other variety. It is thus described:

Plant vigorous, shoots of one season's growth often eight or ten feet long, and consequently suitable for a climber; pegged down and grown as a bush a marvellous head of bloom is the result; hardy, at least in Southern Ontario.

Bloom in clusters of bright crimson semi-double roses, which remain a long time. The Executive of the Fruit Growers' Association have placed this in the list of plants for distribution in 1898.

FIG. 1260.—MARSHALL P. WILDER.

Of the *red roses* which bloomed at "Maplehurst" in 1897, we may mention several:

Marshall P. Wilder—A very satisfactory remontant rose, of fine form and color, and remaining long in bloom, called by some an improved Alfred Colomb.

Origin—Raised from seed of Jacqueminot by Ellwanger & Barry, Rochester, 1884.

Plant, vigorous, with healthy foliage and a fairly free bloomer.

Flower, large semi-globular, full, well formed; color cherry carmine and very fragrant.

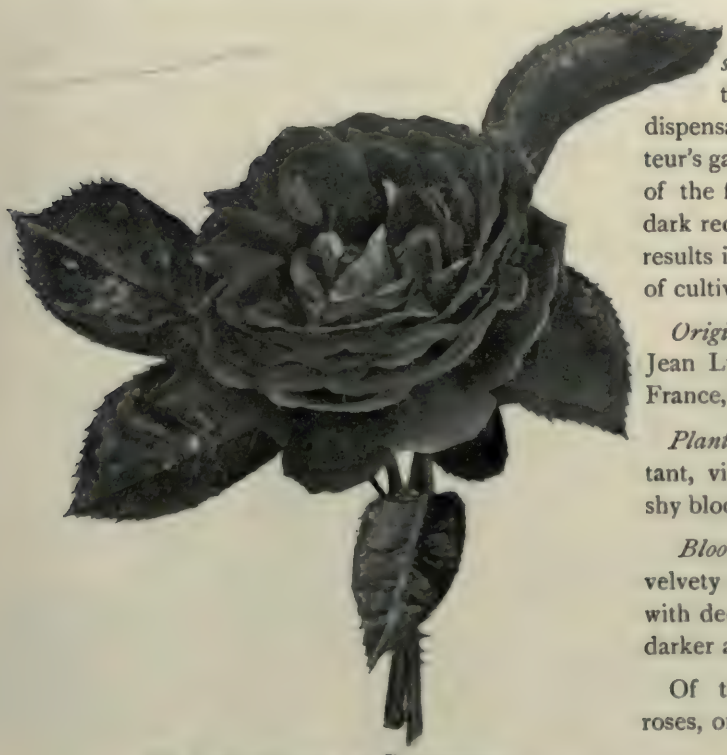

FIG. 1261.—BARON DE BONSTETTEN.

Baron de Bonstetten—A variety that is almost indispensable in the amateur's garden, for it is one of the finest of the very dark red roses. For best results it needs the best of cultivation.

Origin — Raised by Jean Liabaud, of Lyons, France, in 1871.

Plant—Hybrid remontant, vigorous grower, a shy bloomer in autumn.

Bloom — Color rich velvety maroon, shaded with deep crimson, turns darker as it matures.

Of the red or pink roses, one of the finest is

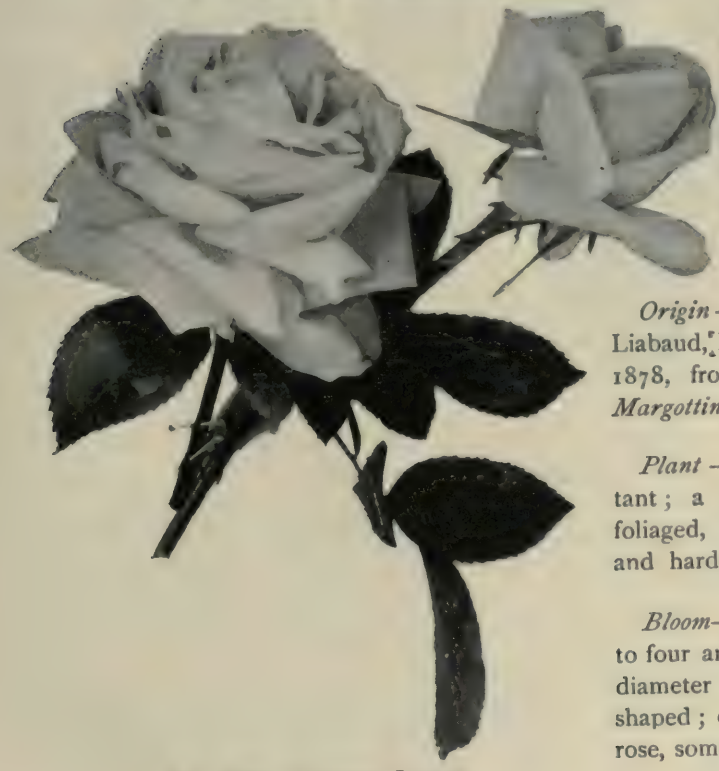

FIG. 1262. —GABRIEL LUIZET.

Gabriel Luizet, which was sent out by our Association three or four years ago, and has given great satisfaction everywhere.

Origin — Raised by Jean Liabaud, Lyons, France, in 1878, from seed of *Jules Margottin*.

Plant — Hybrid remontant; a free grower, long foliaged, a good bloomer, and hardy.

Bloom—Large, from four to four and a half inches in diameter in 1897, cup-shaped; color, pink or pale rose, somewhat fragrant.

Mrs. John Laing is another great favorite among the light colored roses. Its large delicate rose-colored blooms are most showy and beautiful, and we do not wonder that it is a general favorite wherever known. No doubt it is the most beautiful rose that has been brought before the public for some years blooming some years at "Maplehurst," and has proved itself a most satisfactory bloomer. As a bush rose, to show off to fine purpose when in bloom in its place in the garden, we have none that has commended itself more than John Hopper.

Origin—A cross between *Jules Mar-*

FIG. 1263.—MRS. JOHN LAING.

Origin—Raised by Henry Bennett, England, in 1887, from seed of *Francois Michelon* of la Reine type.

Plant—Hybrid, remontant, a vigorour grower, hardy.

Bloom—Large and beautifully formed, on stout stems; color soft pink, very fragrant.

John Hopper.—This rose has been *gottin* and *Madame Vidot* by Mr. Ward, Ipswich, England, in 1862.

Plant—Hybrid remontant, of stout and bushy habit, a fairly good grower, and a free bloomer.

Bloom—Large, from three and a half to four inches in diameter, finely formed, full; color, bright rosy crimson.

Wishing to compare notes with grow-

ers of roses in other parts of Ontario, we have written to Mr. T. H. Race, of Mitchell, to know how these varieties succeed with him, and his reply here appended, shows a different estimate of the value of some of these varieties arising no doubt from the difference in soil and climate. Mr. Race writes:

"Replying to your inquiries regarding roses, I grow the *Baron de Bonstettin* in a rich clay loam. It is not a great wood producer, but is a free bloomer and its blooming season continues from three to four weeks With me it is the finest of all the dark sorts though not quite so strong a grower as its seedling the *Jean Liabaud.*

John Hopper is not a great favorite with me. I find it quite as tender as *Jules Margottin*, not so strong a grower, nor so fine a bloomer and not so fine a rose. It does not stand the early spring season well with me—the sunny days and frosty nights after its winter covering has been removed.

Mrs. John Laing is a strong grower, needs good protection; starts out well as a bloomer but does not open all its buds. Many of them wither away before opening. I do not consider it at all equal to its parent *Francois Michelon.*

Marshall P. Wilder does not do well here. It is not very hardy, not a strong grower, and not a free bloomer. In fact with me, Marshall P. Wilder in the garden is a direct contradiction to Marshall P. Wilder in the catalogues.

Madame Gabriel Luizet has scarcely a

FIG. 1264.—JOHN HOPPER.

fault except that it will not produce enough wood. It does better with me on a lighter soil well enriched, than on heavy clay loam. It is a good bloomer, not profuse, and it does better on budded plants.

Pride of Waltham is a beautiful rose, not a strong grower, and not a profuse bloomer. It is so finely formed that it always attracts attention ; and it lasts well. With me it is quite hardy.

Marchioness of Londonderry is a new rose with me. It is a good grower with fine foliage and seems inclined to bud heavily ; but I did not allow it to mature any blooms. This is the twentieth of November. I have just put on my winter covering of leaves to-day.

FIG. 1265.—HYDRANGEA OTAKSA.

HYDRANGEAS FOR PORCH DECORATION.

WE notice in a late issue of Gardening some questions and answers regarding the growing of *Hydrangea Otaksa* for porch decoration. So many in Ontario are growing one or the other of these in pots, that we give place to the article in our columns.

1. *How should they be treated after blooming? Ans.* All that is required after blooming is to cut off the flower heads but do not cut far back and take the flower heads only. Set away in some place where they can get full attention in regard to watering as they should never be allowed to get dry at the root.

2. *If cutting back is to be done, state where to cut, and whether the shoots that come from the base of plant and flowers are to be cut back the same as the older wood. Ans.* After the plants are well ripened in October they can be cut back a little, but the final pruning is better left till the spring when the plants should be well pruned, cut back to about two plump buds to each shoot; that is leave two joints; each joint has two buds, rub off one bud at each joint, one at each side of the shoot; the shoots that start from the base of the plant, if they flower and there is room for them without crowding the plant, retain them, but the plant is well furnished I would cut them out. All weak shoots should be cut out as they appear; this will throw all the strength into the other shoots and give better buds for another year.

3. *When flower buds are expanding are the weaker ones cut out? If so, how far back? Ans.* If your plants are well furnished with large flowers and a little crowded, cut them out altogether, but this is not necessary. Your own judgment will have to govern. One of the main points to watch is not to let your plants get too crowded in the center. Let the light get in; in this way you can always expect good buds, but if your plants are left to themselves and all shoots retained, all the buds in the center of the plant will be weak and not apt to flower.

4. *Is it advisable to change the soil each year? If so how is it done, and when? Ans* If your plants are in large tubs it is not necessary to change the soil each year; every second year will do. The best time to repot is in spring before the plants begin to start into growth. This is a job that has to be carefully done, as the buds are easily broken off. Our mode of doing this where very large tubs are used is this: A pulley is attached to the ceiling of the work room, a stout soft rope with a hook on the end is tied around the base of the plant, the rope run through the pulley and the plant is raised up. The tub is then removed by striking the top with a hammer. The ball of roots is then loosened and part of the old soil taken away. The new tub, well drained, is then put under the plant and it is lowered into it and the soil rammed in with a stick just as hard as it can be. Where many plants are to be handled this is a good way to do, and a great many can be done in a short time.

5. *Will a frost-proof cellar do to keep them over winter in? Ans.* Yes. Although a few degrees of frost won't hurt them it does them no good. A cellar with a temperature running from 35° to 40° is about right They should never get dust dry in their winter quarters, but no more water than is needed should be given.

ROSES.—The rose if it has been well cared for, is now holding a riotous festival of voluptuous beauty, roses, roses everywhere. The bushes are aflame, and the wind has rose-petaled the walks. Roses are long-lived shrubs, and we read of one rose tree that leans against the old chapel of St. Anne, in Hildsheim, Germany, whose root is eight hundred years old, and whose present height of thirty feet is one hundred and ten years old. Do not forget to cut the roses with liberal hand, and prune to a compact shapeliness this month after the buds cease to come. Then spade well and keep all weeds down, that new growth may be speeded; for the buds come best from the new wood. Keep the garden richly fertilized.—Keziah Shelton in New York Observer.

FIG. 1266.—A BACK GARDEN IN COLORADO.

THE BACK-YARD GARDEN.

THERE is a great deal to be learned about the possibilities of the little city back-yard, which is usually the most barren of places. Not a tree or plant, not even a decent lawn, bears evidence to any taste on the part of the occupant in numerous instances, especially if he is "only a tenant."

When one stops to consider how little the expenditure would be to get a few grape vines, or ornamental climbers to cover the barren walls, a few ornamental shrubs, or fruitful dwarf pears to hide the ugly fence, and a few narcissi, pæonies, or other hardy perennials to ornament the borders of the walk, surely no tenant need to live without the luxury of an attractive as well as profitable garden, a place to develop his taste, and at the same time develop his physical being. The illustration is from Gardening, and shows a back garden belonging to Dr. Gates, of Colorado Springs, Col.

No one can look at this picture without remembering Alfred Austin's charming expression, "The moment I enter a garden I know at once whether it is the owner's garden, or the gardener's garden. Nearly all large and costly gardens are gardeners' gardens, and on my part I would not take them as a gift." It is easily seen that this plot of ground receives the personal care of its owners, who tend to it with loving interest, and whose attentions are amply repaid by the wealth of bloom it produces.

Here in a climate where the hot dry sun burns the petals of gladioli and other flowers, so that it is necessary to fasten cheese-cloth over them at times, and where unusual care is required in watering, we find a spot that otherwise would be bare and unsightly, "blossoming like the rose." Why is this? It is because the owner possesses a love for the inmates of his garden, and attends to them personally. Anyone having a plot of ground at their command can have the same luxuriance of growth in it, the same healthful out-door pleasure that this gentleman evidently enjoys in the care and maintenance of his garden, if they so desire. A few seeds, a small outlay for perennials, a spade and weeding tools, a little patience and energy and a desire to do, all backed by a love for it, will soon produce a floral mine whose dividends can be depended upon.

The illustration shows about one-fifth of the entire garden. Here, *Rudbeckia Golden Glow*, a moisture-loving plant, that under ordinary care attains a height of about six feet, grows nearly ten feet, requiring the lady picking its flowers to use an eight-foot step-ladder. If every back-yard in this great country of ours were like this one, our nation would be a much happier one.

THE OX-EYE.—This introduced weed, against the spread of which an attempt was recently made to induce the Pennsylvania legislature to issue an "act," is getting so popular with florists, that they will soon have to be "protected," rather than legislated out of existence. The French are also fond of it. They call it the common Margaret.—Garden Magazine.

FIG. 1267.—SPRUCE HEDGE.

SPRUCE HEDGE AT LINDSAY.

SIR,—I am sending you a photograph of my Norway Spruce hedge, together with gooseberry pickers, man, myself and berries. There is but one expression regarding the hedge, from those who see it, viz.: that it is the finest they ever saw.

W. M. ROBSON, *Lindsay*.

MANURING ORCHARDS.

"A system of manuring for cultivated orchards, based upon the limited data at our disposal, may be outlined as follows: To provide vegetable matter and to improve the physical quality of poor soils, apply yard manure once in four years, in fall or winter, at the rate of five to ten tons per acre. To aid in the decomposition of vegetable matter and to insure a sufficiency of lime as plant-food, apply lime at the rate of twenty-five bushels per acre once in five years. To provide, in addition, an abundance of all forms of available plant-food at the time of need for the development of the tree and fruit, apply annually chemical fertilizers in the following proportions: Nitrate of soda, 100 pounds; rock superphosphate, 100 pounds; ground bone, 200 pounds; muriate of potash, 200 pounds. The amounts to be applied depend on the character of the soils, the kind of fruit, and the age and vigor of the trees; these given perhaps mark the minimum. By the introduction of crimson clover, we have a plant admirably adapted to cheaply supply nitrogenous vegetable matter for orchards, and its growth is to be recommended wherever the plant can be successfully grown, instead of the use of barnyard manure."—L. H. BAILEY, Ithaca.

CARNATIONS FOR SUMMER FLOWERING AND POT CULTURE.

FIG. 1268.—CARNATION BRIDE OF ERLESCOURT.

CARNATION blossoms, "the Divine Flower," find ready and steady sale everywhere that flowers are in demand. The charming flowers with their spicy fragrance have seemingly endeared themselves to the hearts of this American people, in the flower stores, in the greenhouse and as pot plants, the unassuming carnations are prime favorites. In 1891 the American Carnation Society was organized at Philadelphia for the purpose of fostering and propagating the interest in these flowers. The wonderful creations of new and of improved varieties and the keen appreciation with which the flower-buying public regard them, are, we have no doubt, largely due to the active work of this Society and the pleasing exhibitions they have given. Carnations for winter blooming in the house and summer flowering in the garden are the two branches of carnation culture that are of interest to the amateur. For the former purpose the preparation of the plants must begin at an early date. Procure the young plants as soon as the ground can be dug and the danger of severe frost is over, set them in the open ground not less than one foot apart; somewhat sandy soil produces decidedly the largest and most desirable carnation plants. As the leading shoots begin to run up to flower they should be cut well down, this adds vigor to the growth and encourages production of numerous side shoots that are necessary for good winter-blooming stock. Do not do any pruning after August 1st, or the first crop of flowers will be late. Potting may be attended to as late as the end of October and good results obtained, but early in September is much better. The best time for lifting the plants is a vexed question; some deeming it nonsense to lift them during a hot spell of weather, and others claiming that such weather is the only time this work

should be done. After a few weeks of dry weather the growth hardens somewhat and is semi-dormant. If carnations are potted at such a time they will be found to wilt but very little and this is a decided gain. Do not make the mistake of keeping pot carnations in too high a temperature; 50 degrees to 55 degrees at night will be found best; in day time 60 to 70 degrees may be permitted. Well grown, neatly staked, clean plants will reward you with a luxury of dainty, spicy blossoms. The only insects that may be called enemies are "Green Flies" and the "Red Spider"; for the latter, spraying with water or a moister atmosphere is needed, tobacco smoke or some liquid extract of tobacco will quickly dispense with the Green Flies or Green Aphis. Some fungous diseases now attack the carnation though they are frequently fought with a degree of success where the flowers are grown commercially. It is we think the most satisfactory for the amateur to rely on clean healthy plants to begin with and proper culture during the flowering season.

Some of the newer largest flowered kinds are unsurpassed as pot plants, when well grown:—Mme. Diaz Albertina, pink; Emily Pierson, scarlet; Bride of Erlescourt, white; Meteor, crimson; are all fine. Flora Hill, one of the very newest and very largest whites, promises well for pots. For summer flowering it is not the strongest grower nor the largest flowering that should be chosen, free growers and free flowering habit are more necessary features:—Silver Spray, Portia, Wm. Scott, Thos. Cartledge, Eldorado, J. J. Harrison, Mrs. Fisher, Lizzie McGowan, and Pres. Garfield, are all suitable. Pres. De Graw, white, we have found one of the freest of varieties for summer flowering; it is rather short-stemmed, however, and has been so seldom offered of late years, that we doubt if it is now in commerce at all.

Begin the propagation of plants in February, the larger you have them at planting time the earlier your flowers. Simply pinch the leading shoots twice while still in pots; it is better to let all the shoots run to flower after planting. If the soil is suitable and well enriched, you will be rewarded with lots of good bloom from July 15th, on. The New Margaret strains which are raised from seed, are really effective summer bloomers. The most carefully saved seed will produce about 80% of double flowers; but as it cannot be said till they flower which are the single flowers, they are somewhat dioappointing at times. Some overcome this difficulty by setting the plants rather thickly, so that when the single ones are weeded out, the bed still presents a good appearance.

WEBSTER BROS.

Hamilton, Ont.

GRIMES' GOLDEN PIPPIN.

FIG. 1269.—GRIMES' GOLDEN PIPPIN.

THIS apple was sent out by our Association in 1873, and thought at that time to have great value as a market apple. The variety originated in Virginia on the farm of Thomas Grimes, and is referred to in our Journal for 1887 as "No Novelty." At that time it was still highly spoken of as "an apple that would bring the highest price in the Eng-

lish market on account of its delicious flavor, and its rich golden yellow, when fully ripe, renders it peculiarly attractive." Notwithstanding all these good things said in its favor, the apple has failed to gain upon the favor of our apple growers, and we doubt if any one would recommend it as a profitable variety. The tree is vigorous and productive, and we have engraved a photograph of a tree of this variety in J. Cooper's garden, Lindsay, which he received from our Association in 1873. Certainly it has made a fine tree in twenty-four years, and we thank Mr. Cooper for sending us the photograph.

OUR MEETING AT WATERLOO.

ON invitation of the Waterloo Horticultural Society our Association met at Waterloo on Wednesday, the 15th ult. at 10 o'clock in the morning. Much credit is due to the members of that society for their interest in our meeting, and for their success in bringing together a large local attendance.

The chief paper of the first morning was given by Mr. W. M. Orr, the Superintendent of Spraying for Ontario. He gave a detailed account of his work during the past season. Experimental spraying had been conducted in twenty-nine different localities, and the universal testimony from all quarters was in favor of the great benefits received from the persistent application of the Bordeaux mixture. The scab appeared later than usual in the season, owing to the excessive wet in the latter part of the summer. It is commonly supposed that the first three sprayings are the most important, but this year those who were satisfied with the yearly applications missed the mark. Mr. Orr noticed the danger that arose late in the season and gave a seventh application which was the most effective of all and produced the most interesting results. In one orchard, for example, trees sprayed gave 90 per cent. clean fruit, while those unsprayed gave only 20 per cent. and it was reckoned that from twenty-five trees sprayed, there was a direct gain of at least $100. In another orchard, Spys that had been sprayed gave 90 per cent. clean fruit, while those unsprayed only 50 per cent. One instance was given of Maiden Blush apples sprayed that sold for $4 a bbl., while those unsprayed were so scabby and blemished that they brought only $1.75 a bbl. The cost of spraying was reckoned by Mr. Orr to be only about 2 cents per tree for each application.

This report by Mr. Orr is one of the best testimonies that has ever been given to the public regarding the value of spraying, and those apple growers in Ontario who are aiming at success in their work will surely follow out the instructions which have been given by the department. The failure in many cases on the part of those who have tried and been unsuccessful, arises from two or three causes. First, a poor pump has been used. Some of those that were first offered to the public might be called men-killers, such hard work was required to keep them in operation day after day. Some of those now placed upon the market work so easily that any boy can manage them. Another important consideration in the pump is the nozzle. This should be such as will furnish a fine mist-like spray which settles upon the foliage and fruit of the tree like fog and does not drop to the ground. This is

the only effective spray, and after the application is made the whole tree will be covered with the peculiar green of the Bordeaux mixture. Besides, such a method is the only economical method of applying it, compared with the old cyclone nozzle, for instance, by means of which the application was so wasteful that more than two-thirds fell to the ground, and two or three times the quantity was used that was necessary. Persistency in the work is a feature which is usually neglected. Many persons think that, when they have once sprayed their orchard the work is done for the season, while, on the other hand, several applications should be given, especially if the weather is favorable for the development of the scab.

In the afternoon of the first day, a detailed report was given of the experiments in the export of tender fruit in cold storage to Great Britain, and Mr. Geo. E Fisher reported upon the success which had attended some private shipments of pears, apples and tomatoes from Burlington. Mr. Fisher inquired if the Department would furnish cold storage accommodation for fruit growers in general the next season. Prof. Robertson, who was present representing the Department of Agriculture for the Dominion, replied that, if growers asked in advance for certain space, say sufficient for one carload per week, provision would be made for them, providing the growers asking for such space would not fail to occupy it. Mr. Robertson gave a detailed account of the efforts which had been made by the Minister of Agriculture for the Dominion to assist fruit growers in placing their goods in the English market where he was confident they would bring remunerative prices He outlined the methods of packing which he thought best, and showed some diagrams for the construction of cold storage warehouses on a small scale for the use of fruit growers He also stated that no effort would be spared on the part of the Department to find out all the information possible in the way of facilitating the export of Canadian tender fruits With regard to the export of Canadian grapes, and the objection on the part of the English people to their flavor, Dr. Saunders said he did not believe that the best plan would be to attempt to force Concords down the throats of Englishmen against their will, but rather to first tempt their taste by forwarding the finest flavored Canadian varieties, and perhaps then they might take a fancy to well ripened Concords. Mr. Robertson said he believed a market might yet be opened for our Concords, although during the past season the shipment of them had been a failure. At one hotel in England an experiment was made with Canadian Concords for a whole week. The first day it was noticed that the guests would take one or two berries, taste them and then spit them out. After a day or two, it was observed that a little more attention was being paid to them, and toward the end of the week, the dishes of Concords were emptied completely. Regarding the English methods of eating grapes, it was remarked that the English people have no idea of consuming grapes by the pound in the way that we Canadians do. Indeed, many varieties are so expensive that guests are not expected to take more than two or three berries at one time from the dish. Surely let us hope that Canadian grapes once introduced will create a new era in the consumption of grapes among the English people.

The report of the progress of our experimental work in exporting fruit in cold storage was listened to with deep interest, and a resolution unanimously passed as follows :

Moved by D. D. Smith, seconded by Joseph Tweedle, "That this association has listened with deep interest to the information furnished by Prof. Robertson and Secretary L. Woolverton regarding the result of the trial shipments of tender fruit to Britain in cold storage under the auspices of the Dominion Government, and desire to record our thanks for the same. We appreciate the fact that these shipments have been experimental in every sense, and consequently perfectly satisfactory results could not have been expected the first season, and while on the whole the results have been unsatisfactory from a present financial aspect we are glad to know that they lead us to believe that with further experience a permanent and lucrative market may be confidently looked for in Britain for at least pears, peaches, tomatoes and probably grapes. We would therefore respectfully urge upon the Government, in view of the vast interest at stake, to continue on an extensive scale the experimental shipments another season, putting large quantities of suitable varieties of Canadian grapes continously upon one or more of the British markets, to test fully whether or not the British palate will ultimately become accustomed to and like their flavor, and conducting at the same time further experiments with other fruits to overcome the difficulties found to exist in getting them landed in good condition.

"We also desire at the same time to record our gratitude to Mr. George Fisher of Burlington for the plucky experiments which he and his neighbors conducted this season on an extensive scale on the same line, exporting tender fruits to Britain, and for the report given here of the results of these experiments, which we are particularly glad to know turned out eminently satisfactory from a pecuniary point of view, confirming the results obtained through the Government experiments that at least a number of our tender fruits can be exported profitably under proper conditions and safeguards."

On Wednesday evening the meeting was a very interesting one. The Mayor of Waterloo welcomed us heartily to that city, and the Waterloo Horticultural Society provided an excellent orchestra which gave us some very high class selections during the evening. Prof. Robertson gave a most interesting address on "The value of fruit as food for man" which was illustrated by numerous charts. The President's address called attention to the success which had attended the efforts of the executive in extending the work and influence of our Association during the past year. The membership, he said, has now reached a higher number than it had ever done before in our history, the number being about 3500. This far exceeds the membership of any similar organization in the world.

Prof. Taft of the Agricultural College, Mich., gave a valuable address on "Orchard and Nursery Legislation," with reference particularly to the best methods of dealing with the San Jose scale. This subject was taken up on Thursday, when addresses were given. Dr. Fletcher stated in his address that the San Jose scale increases with wonderful rapidity, the descendants of one female in one season amounting to three thousand million. His address was almost entirely devoted to details regarding this insect, and in the course of it he mentioned that there is a parasite which might in time rid us of this scale, but before that time came, the fruit growers of Ontario might be ruined by the pest. It is most important, therefore, to wage a desperate battle with it at once. He advised spraying in the fall, after the leaves had fallen, with kerosene emulsion, and again in the spring with a strong solution of whale-oil soap and water, the trees to be first closely pruned back.

Mr. W. M. Orr gave an outline of the work on inspection done under the direction of the Department of Agriculture for Ontario, resulting in the discovery of thirteen or fourteen orchards in different parts of the province which are badly infested, the result of the importation of stock from a New Jersey nursery some years ago. Mr. Orr also exhibited specimens of the limbs and fruit affected by the scale.

Deputy Minister C. C. James read before the Association Mr. Dryden's bill intended to bring about the destruction of affected trees found throughout the province, which was fully endorsed by

the Association, and a committee was appointed to confer with the Minister regarding some details.

Dr. Saunders of the Experimental Farm, Ottawa, gave an instructive address on "How to Maintain the Fertility of the Orchard." He ably reviewed the elements required, and pointed out the materials which are most beneficial for the various kinds of fruit. Dr. Saunders is a gentleman of manifold attainments, and every department of work of the five farms comes under his personal supervision, and, owing to the resignation of Prof. Craig, the work of the Horticultural Department at Ottawa, has been added temporarily to his already too heavy duties. Our Association is much indebted to him in the past for he has been a member since the early days of our history, and, though of late years loaded with honors and responsibilities which occupy his time very fully, he still takes the deepest interest in the work of our Association.

The meeting on Thursday evening was of a joint one with the Local Horticultural Society, and there was a large attendance of local members. Our thanks are due to that society for the excellent music provided, and we take pleasure in making special mention of the piano solo by Miss Conrad and the vocal solos by Mrs. Ruby and Miss Riener.

EXPERIMENTS WITH APPLES AND PEARS.

TOWARD the close of the season some apples were forwarded to Glasgow in boxes and barrels, from Grimsby, for the purpose of testing the relative condition of those carried in cold storage and in ordinary conditions. There being no great quantities going forward, the test was not quite as fair as in those seasons where the quantity is immense, and much has to be crowded in close holds heated by the engine.

The chief difference noticeable was that those carried in ordinary conditions were many of them slack, and the others remained firm and tight. Both brought fine prices. Cranberry Pippins brought $4 a barrel; Baldwins, $4 a barrel; Spys, 75c. to $2 a box; and some choice Ribstons and Cranberry Pippins from $2 to $2.50 per box. Some Baldwins and Spys, shipped by Messrs. A. H. Pettit & Son brought $5 a barrel. Mr. Thos. Russell, the consignee, writes: "I am pleased to state that these apples landed in very good condition, and made a good sale, considering that the market was practically glutted at the time with apples of all kinds. These apples were very good and very clean, and our best retail shops took on to them.

The Pears in this shipment did remarkably well, the sale being made on the 7th of December. Mr. Pettit's Anjou sold at high prices, one bushel case, containing 127 pears, brought 23 shillings or about $5.60. One case Lawrence brought $4.87. This is a small sized pear, and the case contained two hundred and seventy-six specimens. One case of Winter Nelis, containing 120 pears, sold for $3.35.

The Kieffer Pear, a variety much criticised as of inferior quality, appears to be a fine shipper. Mr. D. J. McKinnon shipped several cases, some of which sold for $3.65 a case of two hundred and fifty pears, and some half cases containing eighty pears at $2.50 each.

Mr. Russell writes: "The pears landed in good condition, and made a very good sale. Parties who have bought these were very well satisfied

with them, and have been making enquiries for more."

During the season the writer has forwarded several lots of Orange Quinces, and the results have been very satisfactory. Two cases in the last shipment, containing about 128 quinces each, sold for $1.25 each, but this is the lowest sale. Mr. Russell writes that the reason of the low price was that they landed in bad condition. No doubt it was past the season for shipping quinces, when these went forward.

We have just received a letter from Messrs. Wood, Omerod & Co., who say they were the largest purchasers of our last shipment. They say, "The Kieffer pear will not do here when known, but the Anjou will do well, especially if they could be grown with a softer or smaller core. We see no reason why this variety should not be shipped in quantity another season.

All this information we are giving our readers as quickly as possible, after it is received; because we want all our fellow fruit growers to have equal advantage with us from the experiments. Everywhere we find our growers eager to know the results, because our export trade is the hope of the future.

Regarding the Export Shipments from Grimsby, the writer wishes to acknowledge, on behalf of the shippers, the extreme kindness and courtesy shown them throughout the season by the Commissioner, Mr. J. W. Robertson. Not only has this gentleman acceded to all reasonable requests made, but has from first to last, both by personal visits and the fullest communications, kept the shippers posted concerning the English markets and the prices their fruit was bringing. The whole business has been closed to the satisfaction of all concerned, and with high hopes of success in 1898.

DOES IT PAY TO SPRAY?

AGRICULTURE was the first subject of legislative action at this Session. The bill introduced the other day by Hon. John Dryden, Minister of Agriculture, authorizing the Department of which he is head to deal promptly in fighting the San José Scale, the terrible insect pest now threatening the destruction, not only of the fruit industry of the Province, but of all wood growth as well, was the first measure of Government or private origin to be laid before the House.

It will be well indeed for the country if as great success attends this spirited attempt to check one of the most insidious enemies of vegetation that has ever come under the knowledge of science, as is attending the spraying experiments conducted by the Ontario Department of Agriculture during the past two seasons.

A publication of absorbing interest is the special bulletin that may be had by simply sending the address to the Ontario Department of Agriculture, Toronto, whence it has just issued with the title, "Does it Pay to Spray?"

To find out the answer to this question the department gave practical instruction in spraying in twenty-nine orchards in various parts of the Province that were suitable for the work and con venient for the surrounding community of farmers and fruit-growers to visit while the spraying was being done. Mr. Wm. Orr, of Fruitland, Ont., a

successful fruit-grower of wide experience, was appointed as superintendent of the work. Each orchard was provided with a cheap spraying outfit. Three men who knew how to spray were sent to visit these orchards, ten days for each man, and do the spraying at certain fixed dates, notice of which was sent through the mail to all persons interested, and by means of the local press proper announcement was made so that any who cared could come and see for themselves. Besides the actual work of spraying, these men were able to give every possible information about the different solutions and their applications. A bulletin full of accurate data, and carefully illustrated, was widely distributed by the Department.

The sprayers went round the twenty-nine orchards seven times, and literally the walls of Jericho fell, for the authentic statements contained in this special bulletin prove conclusively that spraying not only pays, but pays well, and is a highly successful agency in fighting the flies, grubs, worms and fungous growths that prey upon the orchards of Ontario.

As illustrations of this, where spraying was done, from 75 to 90 per cent. of the fruit was clean, while from trees in the same orchards, not sprayed, only 10 to 15 per cent. of the fruit was fit to pack. Spys and other red fruit from sprayed trees commanded $3.50 per bbl. The best fruit from unsprayed trees would bring but $2 per bbl.

In order to learn what is thought of these experiments in spraying, so as to decide upon continuing them next summer, a letter was sent to the owners of the sprayed orchards, asking for their opinions as to the value of the spraying, and, if possible, to make definite statements as to the actual results per tree. This letter has gathered a mass of information upon the subject of spraying that is contained in the bulletin.

For fear that the farmer with a small orchard, or in fact any owner of apple trees, even of only half a dozen, may think this spraying business does not concern him—an error of incalculable injury to the industry, for fruit-growers great and small are linked together in the success or failure of fighting these enemies—one man's experience is given.

Mr. George Adams, of Smithville, Ont., writes: "I have eleven Spy trees. Eight of them were sprayed, and the result was 24 barrels of the finest fruit I ever picked from them. I sold them at $2.50 per barrel, and four barrels of culls at $1 per barrel, $64 in all. These culls were not spotted, but were undersized and wormy. The three Spy trees not sprayed gave three barrels of badly spotted fruit which sold for $2 per barrel, and about ten barrels of culls, which I sold for $1.25 for the lot." That is to say, the sprayed trees brought $8 each, and the unsprayed less than $3, a difference of more than $5 per tree. The cost of the whole outfit for spraying would be more than made up by the increased profit from a couple of trees. Apart from the time of doing the work, the spraying material costs less than five cents a tree.

This special bulletin should be read by all who have at heart the welfare of an industry already of immense profit to the Province, and capable, if these enemies can be successfully combatted, of enormous expansion, for Ontario apples, pears and, plums will find in Great Britain and other European markets illimitable fields for expansion.

ABOUT PLANT FOOD.

THE need of artificial manures in this country has already been demonstrated; unfortunately, the proper manner of applying them is not as yet as well understood as it should be. Ignorance in this respect frequently causes complaints to be made that commercial manures are unprofitable. Some even go so far as to say that they are simply "stimulants" and act upon the soil very much in the same way as alcohol acts upon the human body, "bracing" it up for a time, and after the effects begin to wear off leaving it in a worse state than before. Such a statement is easily made off-hand, but a little investigation will prove how inaccurate it is.

The commercial fertilizers on the market are compounded for the purpose of supplying three plant food ingredients; these are phosphoric acid, nitrogen and potash. The mixture contains a number of other ingredients like soda, magnesia, etc., but no attention is paid to them for the simple reason that they exist in sufficient quantities in any soil to meet the demands of the crop. The purchaser therefore has only to concern himself about the phosphoric acid, nitrogen and potash in his fertilizer, but often the entire success or failure of his crop is to a great extent dependent upon the proportions in which these three important constituents are applied.

Before deciding *how* to apply fertilizers, the farmer should learn which fertilizer to apply. The best way to gain this information is by practical field tests. Apply different fertilizer combinations to different parts of the field and then compare results. This is actually putting the question to the soil itself, and the answer is received in the shape of yields of varying proportions.

After having found the combination of fertilizers best suited to any particular soil, the next thing is to study the best manner of applying the same. The aim should be to give the food at such a time and in such a way that the plants can absorb and assimilate it to the best advantage possible. We all know that the plant food in the soil must first become dissolved before it can be taken up by the plants; hence we should see that the soil conditions are favorable for the transformation of the fertilizing materials from the solid to the liquid state. This means that the soil should be reduced to the finest possible physical condition, as free from lumps as possible, and so well cultivated that it will afford an easy passage for air and water. After having brought a soil to this state, the next important point is to put on the fertilizers in such a way as to ensure conditions that will be favorable for the change from the solid to the liquid state, and also to allow a sufficient time for the transformation to take place. The great mistake so many make is in applying their fertilizers just at the time of sowing their seed, and as the fertilizers do not then have sufficient time to become dissolved and disseminated, the results are apt to be disappointing, especially during a season of drouth when there is but little moisture in the soil.

If the fertilizing materials are put into the soil some weeks before planting, they have a better opportunity to get into proper condition. Some attention, however, must be given to the special action of certain fertilizer materials; for example, nitrogenous fertilizers like Nitrate of Soda and Sulphate of Ammonia are quite soluble, and if they were put into the soil too long before planting there would be a loss from leaching;

such materials therefore should be applied at planting time. Experience has demonstrated that Nitrate of Soda gives the best results when used in small doses as top dressing throughout the growing season; in other words, applied at times when just needed by the plant.

The mineral ingredients, on the other hand, that is, the materials like Acid Phosphate and Muriate of Potash, will not leach out of the soil; in fact, they form combinations in the soil which hold them there. It is best to put on the potash and phosphate at least some weeks before planting time, and then work them lightly into the soil,

In our opinion if more attention were paid to the proper application of fertilizers, they would become even more popular than they are at present on the Canadian farms.

GERMAN KALI WORKS.

COLD STORAGE FOR FRUIT GROWERS.

SIR,—I should be pleased to see in the columns of your valuable Journal an economical plan for the building of a small cold storage house suitable for the preservation of small fruits, such as plums, pears, grapes, etc.

H. LYNE, *Clarksburg.*

The experience of the past season in trying to export our tender fruits proves that the best results can only be obtained by cooling the fruit before it is wrapped in paper, because otherwise the hot fruit retains its heat when packed, and can afterward be cooled with great difficulty.

Besides the importance of a private cold storage house for every fruit grower who contemplates packing for export, such a house will be of the greatest value in holding fruits in the best condition for our home markets. Especially does this apply to the Crawford peach and the Bartlett pear, our most popular fruits, because by holding them back until the glut is over, and perhaps until Californian stock ceases to pour into our markets, an advanced price can be obtained. For a simple and economical plan for a small cold storage house, we would refer our reader to Mr. J. W. Robertson, Dairy Commissioner at Ottawa, who furnished us with the plans for the one erected at Grimsby, and which cost about $800, and will store about one car-load of fruit at a time, and which requires about 75 tons of ice per annum.

A smaller size could be built for less money. For those who wish to build with the least expenditure of money, and have skill enough to do the work, a description given in Hoards' Dairyman may be of service. Though primarily intended for milk and butter, some slight modifications will adapt it for fruit storage.

"For a room of any size make bottom first of 4 or 6 inch flooring; to start, cut flooring enough for first course—the width the room is to be and length—take 2 x 2 strips, lay them down 18 inches apart, and on them lay two thicknesses of best odorless building paper, and on these strips nail the flooring; turn the floor over, so naked strips will be uppermost (the strips are three inches shorter all round than the flooring); now put on two more thicknesses of paper and lay on flooring flush with strips; cut another set of strips three inches shorter than the floor you now have; lay on these two more thicknesses of paper and put on a last course of flooring.

"You have now two perfect dead air spaces, which is a better non-conductor than any filling, and will always be sweet. Inside of room sides are put on the same as bottom, except at the corners, where, as a matter of precaution, I always put an extra thickness of paper as I add the flooring. In height of building leave enough room overhead for ice chamber (2 feet 6 inches is about right). Now comes the principal feature of the room, namely, the ice racks.

"Four inches below, where the 2 feet 6 inch line is from ceiling of cooler, nail securely a 2 x 4 scantling on long way of cooler, both sides alike; on these rest 2 x 4's two inches apart. These are the floor of ice chamber.

"The ice pans or drip catchers, are made of 2 x 6 pine of good quality, thus: Gouge out one side like a trough, full width of 2 x 6 over and take off corners and plane, so the 2 x 6 will be a gradual fall from centre to edge. These troughs run same way as ice rack. Before placing them have tinner make a strong zinc or galvanized trough two inches wide, one side strengthened by a wire turned in edge, other side straight; at one end have an outlet pipe soldered on, long enough to go through cooler and project an inch or more; if desired, an air trap is put on end. This trough runs long way of room below ice rack, one end nailed two or three inches lower than other to secure quick drainage. On opposite side of room from gutter secure a 2 x 4 to lay first course of drip boards, convex side up, and three inches apart; these drip boards rest just over drain, 4 inches is room enough. Directly under the 3 inch space, and two or three inches lower down, place concave 1 x 6's, one end resting on drain and other end a little higher. You now have an open pan, can see ice every 6 inches, but no water can drop on the floor. The drip boards are not fastened, but can be taken down and washed readily. The rack for ice is not fastened, but can be removed at any time. Make doors on same plan as sides and bottom. This room, built as above, will hold the same degree of temperature at all times and is very inexpensive.

"Outside can be finished with cornice and panel work, if one so desires; put on two or three coats of paint anyway.

"The temperature should be kept at about 34 to 38 degrees Fahr. for fruits and vegetables, although a temperature considerably below the freezing point is beneficial to fruits until the natural heat has subsided. For eggs the temperature should be about 40 above zero, and for poultry about 30 degrees."

For a Co-operative Cold Storage, built and used by a Company of growers, the following plan was furnished to Popular Gardening by E. H. Cushman, of Euclid, Ohio, and, since the principles are the same, a small one for private use might be built after the same style, in accordance with one's means This plan was built at an expense of $7,000, which sum includes the making of two ice ponds, one seven feet deep, both located within forty feet of the building.

A ground plan of the building and its surroundings is shown in the engraving below.

Of the apartments in the building the cold storage room is the main one, size 80 x 30 x 12 feet, and having a capacity of 200 tons of grapes when packed in baskets. Off from the storage room, and connecting with the packing room, is a small room 10 x 10 for gradually tempering the fruit in its passage to and from the cold room. The packing room is in the north end of the building, and this is neatly fitted up with scales, tables, desks, and everything convenient for packing fruit for market. Underneath is a cellar, and above is a storage room for boxes, baskets, etc., both of the same size as the packing place and connected by stairs. A load-

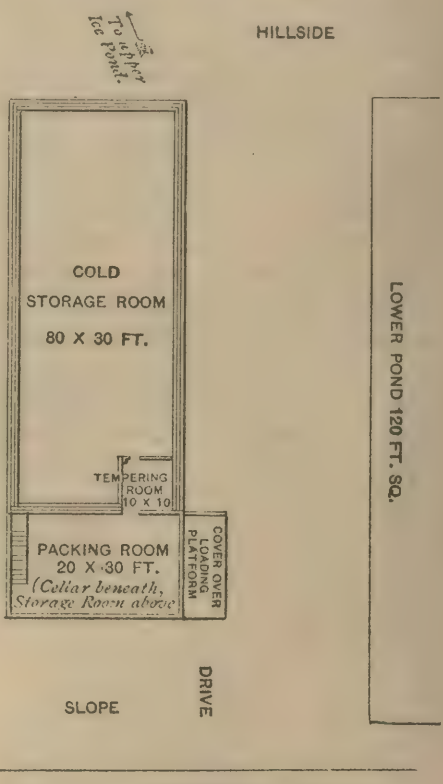

FIG. 1270.—GROUND PLAN OF HOUSE, WITH SURROUNDINGS.

ing platform opens out from the ground room.

The upper figure given is a cross section of the cold storage part of the building. The foundation is of stone and five feet in the ground. The piers for the posts that support the ice floor, of which there are thirty, are four feet square at the base, tapering to twelve inches at the top. On these are heavy cast-iron plates (B), upon which the posts set; the posts are of pine, 10 x 12 inches.

The outside wall of the storage room consists of two chambers for sawdust with an intervening one of air. Of the different features that go to make up this wall, the outside section (C), consists of heavy paper sheathing against the studs, and then siding on the exterior. The inside sections or partitions consist of ceiling stuff against studding. The outside space filled with sawdust is ten inches wide, the inner one eight inches. The central air space is six inches in the clear. The width of the inner sawdust jacket is increased three inches from the floor of the ice chamber upwards. II, are the joists of the ice floor. HH, the small gutters which empty into the trough G attached to the centre beam. J is the ventilator, K the winter door for taking in ice. The floor of this chamber is a patented one, Mr. H. C. Cain, of Cleveland, being the patentee. The floor of the room below is cement, made of lake gravel and Portland cement. Shelves for fruit are shown in the cross section.

The ice chamber is of the same area as the storage room and eight feet deep, having a capacity of 500 tons. At the time of refilling last winter there was about 100 tons of old ice remaining over. The cost of filling is seven cents when ice is eleven inches thick, when three or four inches thick it costs twenty cents per ton. The ice is cut and run in the same as in filling a large ice house.

The temperature of the cold room is 35° when fifty or sixty tons of grapes are in store, and a little higher when the fruit is first put in, but does not vary more than four degrees the year round. The fruit to keep well must be fair and sound; this is insisted upon, or else there will be much loss. Especially is this true with grapes.

I am informed by Mr. Hunt that the storage of grapes is very successful and when taken out during cold weather they keep well. Catawbas have been tested most and retain their flavor until midsummer. Concords do not retain their flavor so well. Apples have their season prolonged about two months, and keep well after being taken from the storage room. It is the same with pears, with this exception, Bartletts when kept over a month spoil very quickly on being taken into the open

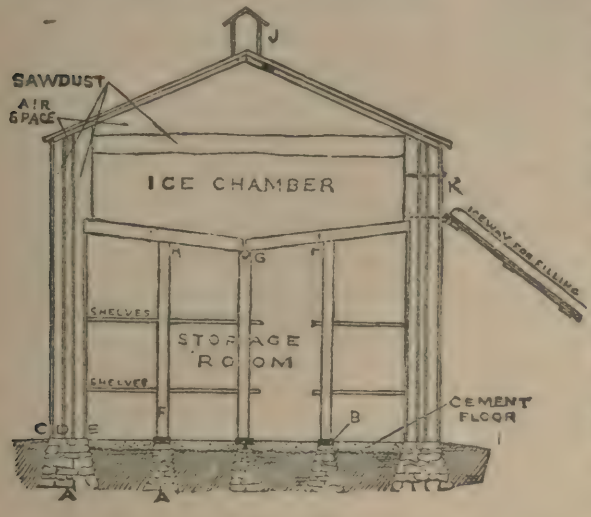

Fig. 1271.

air. Apples and grapes should be ripe, pears a little green when put in the storage room. Plums were kept over and exhibited at the Fruit and Flower show held the 14th and 15th of June, in Cleveland. Sweet cherries have been kept in good condition six weeks, Black Cap raspberries three weeks. Potatoes of last year taken out and eaten August 10 were declared to be better than ripe potatoes of this season.

As the house has only been in operation one season, further experience is desirable before its merits can be fully estimated. The amount of profit in such a storage of fruit is governed so much by the demand and supply of produce, that no general rules can be given on that point. It should be observed that cold storage will not make imperfect fruit fair, or bad eggs good, but will very profitably carry many kinds of perishable produce beyond glutted markets into times of scarcity and good prices.

STARTING COMMERCIAL PEACH ORCHARDS.

THE selection of varieties is a very important matter. Some of the finest peaches do not bear enough to be profitable. The fruit of some of the best varieties is too tender for shipment. Others ripen at a time when larger and better varieties are in the market. The list of profitable market sorts is small. In my locality the Smock, Salway and Late Crawford exceed all others in the amount of fruit harvested. The phenomenal success of the Elberta has created a large demand for trees of that variety. So far it is the best all around peach grown. A list suitable for one locality might not be the one which should be selected for another. Varieties do not behave alike in all localities. Markets are not alike in their demands; and no list can be given which is adapted to all localities.

Pruning should begin before the tree is planted and continue during its productive years, but it is most important that it be well done for the first three or four years. The roots may be pruned before planting. Much of the taproot and most of the laterals may safely be cut away. If all root pruning is done in the fall, before heeling in the trees, the wounded surfaces will granulate during the winter, and root growth begin much earlier in the spring. At planting time the top should be pruned to a straight whip not more than 24 or 30 inches high. The pruning the first year should consist in shortening the leading branches of the last year's growth, leaving them distributed along the stem left at planting time. Avoid having the branches radiate from a common center If properly distributed along the trunk, a branch broken by wind or an overload of fruit works no permanent injury to the tree. Pruning after the first year should consist in shortening the main branches so as to form a short jointed, compact head. Continue this shortening process each year, doing the work when the wood is dormant If vigorous growth is allowed each year without shortening, in a few years the weight of the fruit is borne at the end of long branches, which are sure to break with the first load of fruit, when it ought to be in its prime. An old bearing orchard, which has not been properly trained, should be headed back severely. Should a crop failure follow,

it will give the trees a chance to make ready for better crops. Such severe pruning should never be done after the flow of sap has started in the spring, but always when the wood is dormant.

In cultivating peach orchards, it is the common practice to plow away from the trees in the spring, then harrow the ground, and by the middle of June plow again, this time throwing the earth toward the trees, leveling the ground and doing all after-cultivation with the harrow. Some successful peach growers do not plow at all, but loosen the ground in the spring with the disc or cut-away harrow, doing all after-cultivation with the same tool or a common harrow, aiming at all times to have a mulch of mellow earth upon the surface. As soon after every rain as the ground is dry enough to work, the harrow is started to break the crust and renew the mulch at once. Continue cultivation until the fruit is about to ripen. If kept growing all summer the wood will ripen and fruit buds develop in good quantity for next year's crop.—American Agriculturist.

ELBERTA PEACH.

I HAVE been growing the Elberta both in Georgia and here in Connecticut for some years, and there is no question in my mind but what it is the best yellow peach now known, far superior to the Crawfords in every particular. As to its coloring, it is very bright indeed in the south; but the Elberta, as grown in Delaware and New Jersey and in some sections of New England, the last few years, has been somewhat lacking in color, and if there is any one fault that may be found with this variety, I think it will be that in northern sections of the country it may lack the red blush on the sunny side, which makes it so attractive and desirable. Of course we shall know more about this after a few years more of fruiting; but I am of the opinion now that in northern sections of the country we shall have to feed our lands liberally with potash to give the Elberta its best color.

As to its hardiness of fruit bud. Monday morning, December 28th last, the temperature in this vicinity ranged from 15 to 20 degrees below zero. Since then we have had a week of quite warm weather, thawing out things pretty thoroughly. An examination of our Elberta orchards show that very few of the fruit buds have been injured—practically all alive after this severe freeze; and it was one of the varieties that gave us some little fruit here last year when the peach crop was a practical failure. It is more hardy than Mountain Rose, Oldmixon and Stump, which are quite desirable and hardy varieties here.—J. H. Hale, in Meehan's Monthly.

WICKSON PLUM.

FIG. 1272.—WICKSON PLUM.

MANY favorable comments on this new Japan plum were made at our meeting the other day in Waterloo, and since we are sending out this variety to our members next spring we are glad to give place to the following remarks by Prof. Beach, in American Agriculturist:

"Wickson the new Japanese cross-bred plum, which was originated by Luther Burbank, California, and first fruited by him about 1893, has been successfully fruited in New York, and is attracting the favorable attention of nurserymen and fruit growers. Some of the features which recommend it for testing by those who are interested in plum culture are its extremely large size, fine flavor, good quality and attractive color. Even when picked rather green it colors and ripens well. The skin is thick and uniformly colored with red shaded with reddish purple. It was produced by crossing Kelsey with Burbank. Like Burbank, it is a cling, with amber yellow flesh, juicy, yet so firm that it keeps and ships well. This fruit was borne the past season on grafts which were set three years ago and reached a diameter of 2¼ inches. It bears the largest fruit of any Japanese plum which has yet been introduced that is hardy in New York. At the Geneva, N. Y., experiment station, grafts which were set in 1895 survived the exceptionally trying winter of 1895-6 and fruited in 1897.

The Wickson makes a good nursery tree, being a vigorous upright grower, with rather narrow leaves, the edges of which have a tendency to turn inward, so that the tree reminds one of Prunus Simoni. Taking all things into consideration, it is not surprising that nurserymen are increasing their stock of this variety."

WATERING.

IN watering plants in rooms, discretion must be used. Cactuses, Cereuses and, in fact, all the so-called succulents, need but little water in winter, simply enough to keep them growing. Callas, and all that class of aquatic and semi-aquatic plants will bear watering to saturation. As a rule, smooth-leaved and hard plants require less watering than pubescent, and soft-leaved plants. Many small pots require water every day, sometimes twice; they dry out so fast unless plunged in some moist material. The dfficulty with amateurs is they generally give small pots too little water, and large pots too much. Until the true habit and necessities of a plant are learned, it is better that it dry sufficiently to droop a little, rather than the soil be kept saturated. Over-saturation kills more plants than too much moisture.—Floral Instructor.

PROPAGATION AND PRUNING OF CURRANTS.

Fig. 1273.—Branch of Currants.

THE rules for the propagation of the gooseberry may be applied to the currant. For the purpose of making well-formed bushes the cuttings should be fifteen inches long, and all buds carefully taken out, excepting the three at the upper end. The cuttings should be inserted into the soil six inches; there will then be left from four to five inches of clean

FIG. 1274.—NATURAL GROWTH OF CURRANT.

stem between the surface of the soil and the first branches. If the cuttings are planted in the fall, the three buds that are left will each make a growth of at least eight or ten inches during the following summer. At the fall pruning these shoots should be cut back to two buds each; from these, two more shoots will be formed the next season, thus forming a bush of six branches. These branches should all be cut back at the winter pruning, so as to leave them from four to six inches long, being always careful to cut back to an outward bud. Each terminal shoot should be cut back, at the winter pruning, until

the required height is attained, which need not exceed three feet. If the soil is rich and the bushes make strong growth they may be permitted to grow to a height of four feet. All laterals that are thrown out from each main branch should be cut back to two buds, at the winter pruning. It will be found when the laterals are treated in this way, that fruit spurs will be formed throughout the whole length of the main branch. The object in cutting to a bud pointing outward, is to encourage the bush to form an outward growth. Under this treatment, work among the bushes will be found much more convenient, and better fruit will be produced. There will be an abundance of leaves and laterals formed each year, to shade the fruit from the direct rays of the sun; thus the gathering of the fruit will be made much easier, and a better appearance given to the plants.

The accompanying cut Fig. 1275, shows the manner of pruning and the position of the fruit buds on the main branch.

Fig. 1274 represents a branch of the currant in its natural state, with but few fruit spurs. It will be readily seen that the plant has to produce a great amount of wood which should go to the production of fruit, if pruned as in Fig. 1275.

This system of cultivation has been used at this Station, and has proved very successful. It will be understood that the system referred to above does not apply to the treatment of the black currant. It is practiced only with the white and the red varieties. The fruit of the black currant is produced on the one year old wood, and consequently it must not be spur-pruned. Simply thin out all wood that has already fruited and leave the young wood for the production of fruit the following season. This treatment encourages it to produce a strong growth of young wood each year.

FIG. 1275.—The above Plate shows the fruiting of the Currant when treated as in Fig. 1273.

CHRYSANTHEMUM SHOW AT GRIMSBY.

THE Members and Directors of the Grimsby Horticultural Society are to be congratulated upon the great success of the first Chrysanthemum Show which was held in the Town Hall on November the 11th. In May, each member received a basket containing five choice named varieties of Chrysanthemums in five inch pots. Seventy-five baskets were distributed by the Society, and the care given the plants was most gratifying to all interested in the exhibition. The morning of the show fruit lorries were sent out in care of experienced men, to convey the flowers to the Hall. They were all labeled on coming in, and safely returned to the owners. The plants of members were arranged on long tables two feet in height, on the north side of the hall. Honorary prizes were given for the best collection of fine plants and best specimen plant. There was keen competition among the members, and a difficult task for the judges, Mrs. Osborne, and Mrs. Gibson wife of the member for Lincoln, to decide. The centre of the Hall was filled with Chrysanthemums of rare and exquisite beauty, while on the north side, Mr. Cole, the Florist, filled the tables, the length of the Hall, with decorative plants and Chrysanthemums from his greenhouses, which added greatly to the beauty of the exhibition. He had in his collection some magnificent specimens.

The stage was very prettily decorated with yellow and white Chrysanthemums, and the bronze and red burrs of the Ricinus, some of the branhes two feet in length, and these were thought by some to be huge bundles of grapes; the whole very beautifully set off by a background of palms, some magnificent specimens belonging to Mr. William Gibson. The Hall was crowded by lovers of plant culture, and never before was an exhibition of such excellence presented to lovers of flowers in Grimsby.

E. PALMER, *Grimsby.*

WINTER CARE OF GERANIUMS.

First, give the plants all the light you can command, and turn them every day or two, so that all parts may feel the influence of the sun.

Second, be careful about overwatering. It is better that the soil should become a little dry and then be fully saturated with water, than that it should be kept quite moist all the time.

Third, keep the temperature down to about 60°, a little less at night, and a little more in full daylight.

Fourth, see that the atmosphere is not made over-dry by furnace or stove heat. Water should be kept on the heating apparatus, so that it may evaporate and pass into the air of the room.

Fifth, occasionally wash or sprinkle the leaves of the plants, in order to remove dust. By taking them to the kitchen sink once a week this work may be quickly and neatly done.

Sixth, keep the plants free from insects, especially green-fly.—Vicks' Magazine for February.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter or Post-Office Order are at our risk. Receipts will be acknowledged upon the Address Label.

ADVERTISING RATES quoted on application. Circulation, 4,000 copies per month.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

Notes and Comments.

CASES FOR EXPORT of pears should be made of basswood, not of pine, which affects the flavor of the fruit.

A COLD STORAGE ought to be built by every fruit grower, Mr. Robertson says, so that growers can ship their goods to home markets, in better condition and more evenly graded.

THE PACKAGE used by the Burlington growers for export of pears during 1897 contained about four-fifths of a bushel; four of them containing about the same as one barrel.

THE COST per case of exporting fruit from Grimsby to London was about 70c., and to Glasgow about 60c.

GRAPES did not pay last season, but, no doubt, the money lost was well invested in introducing to British consumers Canadian grapes. If this fruit can be put on the English market in quantity for a year or two, no doubt a good demand will be created.

COLD STORAGE HOUSES cost about 10 cents per cubic foot of space, counting both the ice room and the storage room.

SMALL PEARS, apples and peaches and large tomatoes are not suitable for the British market.

APPLES should be packed cold for the best results.

THE VERGENNES GRAPE is a grand keeping variety. Two plates of this variety was shown at our Waterloo Meeting by Mr. W. M. Orr, of Fruitland, in excellent condition, kept in an ordinary cellar.

CHRYSANTHEMUM CULTURE, by Jas. Morton, was the book recommended by Prof. Hutt, in his address, as a guide to amateur growers.

THE HOLIDAY NUMBER of the *New York Fruit Trade Journal* is a very fine issue, and full of illustrations. Of course it deals with matters connected with the fruit trade rather than with the interests of the fruit grower, but it keeps one thoroughly posted on the outlook for the sale of fruits. It is accompanied by a pretty calendar, with beautiful colored illustrations.

THE SPRAYMOTOR pump was exhibited at our Waterloo meeting, by Mr. Heard. He exhibited a new plunger of the greatest value in lessening the work of pumping, and at the same time making the pump do better work than ever.

THE HUNN STRAWBERRY is being offered for the coming spring. It originated with C. E. Hunn, of the New York Experiment Station at Geneva, N. Y., a seedling of Johnson's late fertilized by Sharpless. In 1894, Prof. Beach spoke of it as giving a large yield, and described it thus: "It is very vigorous, of good dark color, large size and borne on long strong stems. Four rows of this variety in blossom are shown in Plate I, which shows the strong up-right fruit-stems and large, vigorous leaves."

The following tabulated statement, made by a grower at Middlehope, N. Y., will show the various points of comparison of the different varieties. The appearance and shipping qualities of the Bubach, Sharpless and No. 208 being so similar, all were packed together and no separate account was kept. This will extend the apparent length of season of the Bubach, and also lower its showing for productiveness. For it commenced and ended fruiting earlier than either of the others and was more prolific. In computing each column of the following table, the sum of the length of all the rows and the total product of each variety was taken, and from these the product and net returns of 100 feet of row was reckoned. The average net price was found by taking the total sales of each variety, less cost of freight, cartage and commission and dividing it by the total number of quarts marketed of each variety. As we had no regular rows of Beder Wood we merely give the dates of the first and last shipments, and the average price per quart in a local market.

	BEDER WOOD.	BUBACH.	LADY THOMPSON.	CUMBERLAND.	HUNN.
Date first shipment	May 31	June 4	June 7	June 8	June 21
Date last shipment	June 15	June 29	June 26	June 25	July 2
Number quarts in 100 ft. of row	.....	69.62	86	44	51.6
Net returns from 100 ft. of row	.....	$4.47	$5.37	$2.73 6 10	$5.57½
Average price per quart	7 36 cts. 100	6 4 cts. 100	6 25 cts. 100	6 18 cts. 100	10 8 cts. 10 10 cts.
Per cent. of cup before Hunn	100	64.25	92.7	71.85	.....

We do not speak of this berry from experience; indeed, we do not know that any one in Canada has fully tested the berry.

CLAPP'S FAVORITE PEAR. *(Natural Size.)*

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CLAPP'S FAVORITE.

IN these days of low prices and frequent market gluts of nearly all varieties of fruit, it will not do to plant orchards too largely of one fruit, however good. Twenty years ago every fruit expert recommended planting the Baldwin apple, the Bartlett pear and the Concord grape, but now the folly of such advice is evident, for these fruits are now produced in such abundance that there is a very poor sale for them.

The Bartlett pear is one of our most popular, and yet for two or three years past the price is little more than enough to pay for handling. Just because everybody grows it, and it is a variety that ripens up so rapidly, dealers are very cautious about buying it in quantity. Now unless the British market opens up for this pear, or we can hold it back long after its season by cold storage, this excellent variety will become a drug on our Canadian market.

Evidently the object now before us in planting is to secure such a selection as will best cover the whole season with the finest and most salable fruit. Among the early pears we have for example Giffard, Clapp and Bartlett, ripening in the order named, beginning about the middle of August, and covering a good part of September.

Clapp's Favorite is a beautiful pear where well grown and well colored, and of very good quality, so that it is well fitted to be a profitable market pear, with one fault, that it soon passes out of prime condition, and if allowed to ripen on the tree it will rot at the core. On this account the fruit must be gathered as soon as full grown and well colored, and shipped while firm.

Origin—Raised by Thaddens Clapp, of Dorchester, Mass., U.S.

Tree—Upright vigorous grower, somewhat spreading, forming a symmetrical top; bears fruit of uniformly large size, pretty evenly distributed; productive; succeeds well as a dwarf on rich soil.

Fruit—Very large, pyriform, obovate, usually symmetrical, sometimes unequal;

skin pale green changing to yellowish green, with dull red on sunny side which becomes bright crimson at maturity, somewhat resembling the coloring of the well-known Louise; stalk, stout and fleshy, obliquely inserted without cavity; calyx, large, half open, in shallow basin.

Flesh—Creamy white, fine, tender, juicy, with very agreeable flavor; good to very good.

Season—August 20th, to September 1st, (1897).

Quality—Good for dessert and cooking.

Value—Good for home market.

Adaptation—Counted perfectly hardy in Grey, Simcoe, Bruce, Huron, nearly hardy in South, and tender in North Ontario County.

THE IMPORTANCE OF GRADING.

MANY growers seem to think that grading does not pay for the time and trouble incurred, and that it pays better to face up the packages, and hide the rubbish among the better grade. The mistake made by this method is well shown by the following from the Rural New Yorker:

A fruit grower sent a lot of 12 barrels of apples to market, good, bad and —— worse, all mixed together. They sold for $1.50 per barrel, although there was a fair proportion of good ones among them. Here is about the way the account would stand:

RECEIPTS.

12 barrels of apples at $1 50	$18 00

COST OF MARKETING.

12 barrels at 25c	$3 00	
Freights at 10c. per bbl	1 20	
Cartage at 5c. per bbl	60	
Commission at 10c. per bbl.	1 20	
		6 00
Total net receipts		$12 00
Net price per barrel		1 00

Had one-half of the best of these apples been sorted out, and carefully packed in attractive shape, they would have sold much more quickly at double the price per barrel for which the whole of them sold. Then the account would have stood as follows:

RECEIPTS.

6 barrels of apples at $3 per bbl.	$18 00

COST OF MARKETING.

6 barrels at 25 cents	$1 50	
Freight at 10 cents per bbl.	60	
Cartage at 5 cents per bbl.	30	
Commission at 10c. per bbl.	60	
		3 00
Total net receipts		$15 00
Net prices per barrel		2 60

It is plain that, when the apples were properly assorted and only the six barrels of choice ones were sent, the net receipts were $3 more than in the other case. Which shipment gave the most profit to the shipper? These figures do not take into account the six barrels of inferior apples that were left at home, which were worth something. Another feature of this matter is the effect on the market. The shipment of these ill-assorted, under quality products, is the greatest factor in the so called glutted markets which are a bug-bear to commission men and producer alike. The above case is not a fancy sketch, but is duplicated in different products and in various degrees every day in our great markets.

FIG. 1276.—WATERLOO PUBLIC PARK.

THE above sketch presents a good view of the Waterloo public park, sloping down gently to the "lake," not very far from the waters of the Grand River, whose majestic flow adds much to the natural beauty of the country between Waterloo and Berlin. The town itself was founded in 1806, and became a town in 1876, but even as far back as 1840 there was sufficient æsthetic taste to lead to the purchase of 60 acres to be reserved as a public park. What an example to many other towns in Ontario, which with perhaps even more favored surroundings, have never yet made a move toward a public park for the rest and recreation of their industrious inhabitants. No finer site could have been chosen, for natural position and beauty, with its wooded eminence of beech and maple, its splendid bicycle track and sporting grounds.

The Horticultural Society of Waterloo takes a deep interest in the improvement of this park, and hopes to make it one of the best inland parks in Canada. In 1895 the Society planted

FIG. 1277.—MR. JAS LOCKIE.

FIG. 1278.—A VIEW IN WATERLOO PARK.

the first flowers in it, a bed of cannas, and have continued this ever since; and last year added a bed of German Irises.

Mr. Jas. Lockie, the active president of this Society has done such excellent service in horticulture in Waterloo, that we have asked to have his photograph engraved for our pages. He was born in Scotland in 1833, came to Canada in 1855 and worked at his trade as a carpenter, until 1870, when he went into the fire insurance. In this he was successively, agent, head clerk, inspector

FIG 1279.—A SCENE ON SILVER LAKE, WESTSIDE PARK, WATERLOO.

FIG. 1280.—WATERLOO TOWN, LOOKING NORTH-WEST.

and manager; and last September was appointed president. He was also presented with many valuable testimonials showing the esteem in which he was held by the company.

Always having a taste for gardening and flowers, he always made them a study in his travels, and now has a small greenhouse containing nearly one hundred different varieties of cacti, and a varied assortment of other plants. His garden is fairly well filled with perennial plants. He has twenty varieties of lilies, eight hundred bulbs of gladioli, as many tulips, a large number of hyacinths, Iris Germanica, Kaempferi, Anglica and Hispanica, twelve varieties of clematis, and many beautiful native wild flowers.

In order to give some idea of the excellent work of our affiliated Society at Waterloo, we take the following from the address of Mr. Jas. Lockie, the President, at our last meeting. After speaking of the failure of the ordinary method of conducting such a Society by spending money in prizes, and the wisdom of using the funds instead in the purchasing of plants, seeds, literature, employing lecturers, etc, so that all the members get equal benefit, Mr. Lockie proceeded as follows :—

You are probably aware that the majority of this town are Germans or of German extraction, and, if there is any one thing more than another that the German cares for, it is his home and his garden, growing his vegetables and small fruits and having flowers in his home. So we had no difficulty in forming our Society, and soon had seventy-five members for the year. The success was almost unprecedented, and the next year with very little difficulty we had one hundred and twenty-five members, and in this, our third year, we have one hundred and fifty-five—not a bad showing for a town of 3,300 inhabitants.

During the year we have received from your Association and distributed to our members 25 new Japan lilacs, 75 Japan lilies, 28 Conrath raspberry and 37 Dempsey pear trees. Regarding the lilies, I may say that the bulbs were fine. I saw one growing in the garden of a

gentleman present, with thirteen flowers upon it. They were exceedingly satisfactory, and we are much obliged to your Association. Besides, we ourselves purchased and distributed 67 plum trees, 67 cherry trees, 402 raspberry plants, 37 hydrangea grandiflora, 37 rose bushes, 612 house plants and 1,860 hyacinth bulbs. It requires no explanation on my part to convince everyone that such a distribution must have a great effect in a small town like this, which will be evident in a few years. The hyacinth bulbs have proven very satisfactory, a good many members having never grown them before. You can hear the school children telling each other of the beautiful flowers they have in their houses. They had seen the dry bulbs put in a flower pot with some earth and set away in the cellar for some weeks, and anxiously inquired why. Later they saw these bulbs brought up with the spikes started, and watched them day after day until they blossomed into beautiful and fragrant flowers as fine as the richest grow in their conservatories. See what an influence all this has had upon them.

We well know how much your Association has done with the aid of the Government to encourage fruit growing in this country, which is a great source of wealth, but we consider that the Government is also doing well in assisting floriculture. I can see nothing that tends to encourage home making more than growing flowers about the house and garden.

We have an exhibition here which is made free to the public. The town council gives us the free use of the hall, and we invite everybody who chooses to bring in exhibits, and we send a conveyance to bring and return heavy and valuable plants. You would require to visit our exhibition to see the interest that is taken in it. A committee of ladies with excellent taste arrange the plants upon the tables, not classifying them as when prizes are given, but they place them in the centre and around the sides of the hall so as to produce the best effect, for in this way you can arrange flowers and shrubs of different colors so as to make a beautiful display, much better than when they have to be arranged for judging.

FIG. 1281.—SCENE IN WATERLOO PARK.

Now, sir, we of the Horticultural Society have a creed. We believe in our society, that it has been the means of encouraging an elegant and refined taste and has a powerful influence in bringing about an improvement in our town, in our homes and in our public parks. We believe in our country, we believe in Canada, though many of us have been born in distant lands, and, of course, cherish those lands with true affection, but, nevertheless, we all love Canada. Tennyson says in his poem to Alexandra :

> Though Norman, Saxon and Dane are we,
> We all are Danes in our welcome to thee.

We may parody that by saying :

> Though German, English and Scotch are we,
> We all are Canadians in our welcome to thee.

We are gratified and pleased with this meeting, and hope for good results, and wish you still further success in your work.

PRUNING RASPBERRIES.

A GREAT saving of time can be made in the fruit farm by winter pruning. If the snow is not too deep the gardener can cut out all old wood from his raspberry plantation, and have it burned. He can at the same time shorten in his red raspberry canes, cutting off the weak ends a little so as to throw all the strength into the plump vigorous buds, and thus secure an abundance of large berries. The black caps need cutting back in the growing season, because they are more vigorous in growth, and will throw out numerous side shoots which will fruit abundantly the following season. This would not suit the red raspberry because it is less vigorous, and the small side branches would be too weak to give fine fruit, and therefore should for the most part be discouraged.

AN OLD APPLETREE.— Mr. Jacob Stroth, an amateur photographer and antiquary at Waterloo sends us a photograph of the oldest apple tree in that section. It is on the Sherk homestead on the banks of the Grand River opposite the village of Doon. The tree is grown from seed brought from Pennsylvania in 1800; and measures at the base 3 ft. in diameter, and at a distance of 5 ft. from the ground, 2½ feet.

FIG. 1282.—AN OLD APPLE TREE AT WATERLOO.

ELÆAGNUS LONGIPES.

FIG. 1283.—ELÆAGNUS LONGIPES.

ONE of the finest among the new ornamental shrubs available, is the long-stalked Elæagnus, or Elæagnus longipes, a species of Wild olive, or Oleaster. It grows to a height of about three feet and is a very pretty spreading evergreen shrub, with deep reddish brown twigs, and clusters of long-stalked, orange-colored flowers opening about the middle of May, and succeeded in July by pretty red berries, which hang some weeks and are edible. The engraving, kindly loaned by Messrs. Stone and Wellington, gives a good idea of a fruiting branch well loaded with berries.

THE SAN JOSÉ SCALE.

FIG 1284.—SAN JOSE SCALE.

IN response to the earnest request of our Association, the Minister of Agriculture for Ontario has introduced a bill to prevent the spread of the San Jose scale, which in its amended form, has received the full sanction of the House. The importance of this act of Parliament is so great that we give the full text of it in this issue, and earnestly beg the hearty co-operation of members, and of our readers everywhere, in carrying out its provisions. Those who received advance copies of the Act at our meeting at Waterloo, will notice that certain changes have been made, with the object of making the bill still more stringent. The object is to stamp out this pest in those few sections of Ontario into which it has been introduced upon United States nursery stock ; and if this can be done by Provincial legislation, we hope to keep out further importations by a Dominion Act. With this in view a committee of our Association has waited upon the Hon. Sidney Fisher, and are encouraged to expect that prompt and speedy action will be taken.

An Act to prevent the spread of the San Jose Scale.

Her Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows :—

1. This Act may be sighted as *The San Jose Scale Act.*

2. In this act the word "Minister" shall mean the Minister of Agriculture for the Province of Ontario.

The word "Plant" shall mean any tree, *vine*, shrub, or any part of a tree, *vine*, shrub or plant, the fruit of any tree or plant.

The word "scale" shall mean the San Jose Scale insect in any of its stages of development

3 No person shall import or bring, or cause to be brought into the Province of Ontario, for any purpose whatsoever, any plant infested with scale

5. For the purpose of scientific investigation the Minister may from time to time, by writing given under his hand, except such persons as he may deem proper, from the operation of the two preceding sections, and while acting under such permission, such persons shall not be subject to the penalties imposed by this Act.

6. Any person having *reason* to *suspect* that any plant in his possession, or in his charge, or keeping, is infested with the scale shall *forthwith* communicate with the Minister in regard to the same, and shall furnish the Minister with *all such* information in regard to the source or origin of the said infestation and the extent and nature of the same as he may be *able* to give.

7. Whenever the scale exists, or is supposed to exist on any plant, the Minister may direct a competent person to make an examination and inspection and may order that any plant so infested, or such part as he may deem advisable, shall be immediately destroyed by burning either by the person appointed to make the inspection, or by the person owning or having possession of the said plant or some other person so directed in writing, and the person so directed shall make a full report to the Minister in writing as to the nature and extent of the work so performed, together with a fair estimate of the value of the plant destroyed.

8. For the purpose of enforcing this Act, it shall be the duty of every inspector appointed under *The Yellows and Black Knot Act* to make careful examination and inspection for the occurrence of the scale within the municipality to which he is appointed, and to report forthwith to the Minister every case of infestation and neglect to make such report shall render the inspector liable to the penalties imposed under section 11 of this Act.

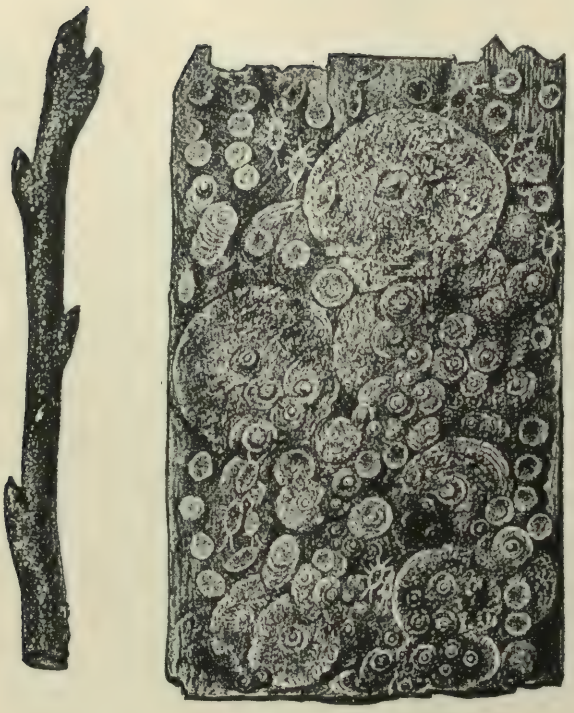


FIG. 1285.—Appearance of scale on bark. *a*, infested twig natural size. *b*, bark as it appears under hand lens, showing scales in various stages of development and young larvæ.

9. Any person appointed by the Minister under this Act to inspect, or to destroy any plant, for the purpose of enforcing the provisions of the Act, shall, upon producing his authority in writing, have free access to any nursery, orchard, store, storeroom, or other place where it is known, or suspected, that any plant is kept.

10. Upon the recommendation of the Minister there may be paid out of the Consolidated Revenue Fund of the Province to the owner of any plant (not including fruit) so destroyed a sum not exceeding one-fourth of the value thereof as reported upon by such officer or other competent person, appointed as aforesaid, but nothing in this section shall apply to any plant imported into the Province within a period of one year prior to the examination by the officer aforesaid.

11. Any person neglecting to carry out the provisions of this Act, or any person offering any hindrance to the carrying out of this Act shall, upon summary conviction, be liable to a fine of not less than $20 nor more than $100 together with costs, and in default of payment thereof shall be subject to imprisonment in the common jail for a period of not less than ten days nor more than thirty days.

12. The Lieutenant-Governor in Council may by order direct that other scale insects than the San Jose Scale may be included in the provisions of this Act, and therefore during the continuance of such Order-in-Council the word "scale" in this Act shall include all other scale insects. Public notice of such Order-in-Council shall be given by publication in two successive issues of The Ontario Gazette.

The importance of preventive measures is further shown by the statement of Prof. Stedman, Missouri, that already this pest has done several millions of dollars damage in California; and threatens to be still more destructive in the East. Its first appearance on the Continent was in San Jose, in 1873, having been brought there from South America. Within twelve years it has infested every fruit section of that State, and reached the orchards of Oregon and Washington.

In 1892 it was found in New Mexico, and also in several eastern states, more especially New Jersey, whither it was brought on some Japan plum stock.

Evidently this pest will infest every orchard in Canada within the next ten years, unless the greatest promptitude is taken to destroy it.

WINTER PROTECTION OF THE PEACH.

NUMEROUS experiments in protecting the peach against winter killing have been carried on at the Missouri Experiment Station during the past two years. The results of these trials are reported by Prof. J. C. Whitten in bulletin thirty-eight of that station. The bulletin is illustrated with cuts showing different methods employed, and is for free distribution among the peach growers of the Mississippi Valley. In this latitude, winter killing of the fruit buds of the peach is usually due to the unfavorable effects of freezing, after they have been stimulated into growth by warm weather during winter or early spring. It is seldom that the temperature drops sufficiently low to injure dormant peach buds. Peach fruit buds may safely endure a temperature of 10 or 20 degrees below zero, provided they mature well in autumn, are entirely dormant, and the cold comes on gradually. Zero weather may kill fruit buds that have swollen during previous warm days, or that were not properly ripened in autumn. The early swelling and growth of the buds is due to the warmth they receive from the sun on bright days, is practically independent of root action, and may take place on warm, sunny days in winter, while the roots are frozen and dormant. Shading or whitening peach trees to prevent their absorbing heat on sunny days, opposes growth of the buds, and is, consequently, a protective measure. Whitening the twigs and buds by spraying them with lime whitewash is, on account of its cheapness and beneficial effects, the most promising method of winter protection tried at the station. These whitened buds remained practically dormant until April, while unprotected buds swelled perceptibly during warm days late in February and early in March. Eighty per cent. of the whitened buds passed through the winter safely, while only 20 per cent. of the unwhitened buds escaped winter-killing. Whitened buds blossomed three to six days later than unwhitened buds. Thermometers covered with material the color of the peach twigs, registered, during bright sunny weather, from 10 to over 20 degrees higher than thermometers covered with white material of similar texture, thus indicating that whitened peach twigs might be expected to absorb much less heat than those that were not whitened. The whitewash used was four parts of water, one part of skimmed milk, and enough freshly slaked lime to make as thick a wash as could conveniently be pumped through a Bordeaux spray nozzle without clogging. This wash was sprayed on the trees by means of a bucket spray-pump. The first application was made the last of December, and three subsequent sprayings were necessary to keep the trees thoroughly coated until spring. The cost for material and labor is about 40 cents per tree, when done on a small scale.

Shading the trees with canvas hay covers was about as beneficial as whitening, but was more expensive. "Baling," by drawing the branches together is a vertical bundle and covering them with coarse grass and corn-stalks, protects the buds. Old trees with stiff branches cannot well be treated in this manner without injury to the branches. "Layering," or bending down the trees in autumn, and covering them with earth, has proven beneficial. Shading the trees with broad sheds enabled peach buds to survive the winter uninjured, when 80 per cent. of unprotected buds

were killed. Trees protected in this way blossomed later, remained in bloom longer, set more fruit in proportion to the number of apparently perfect flowers, and held their fruit better than any other trees on the station grounds. This is the most effective means of winter protection tried at the station, but it is probably too expensive for commercial orchards.

PLANTING AND CARE OF SHADE TREES AND WINDBREAKS.

THERE is great room for improvement in the country districts of Ontario by planting shelter belts of native trees. With strange madness the farmer has wantonly destroyed from the borders of his fields beautiful ornaments which nature had provided, and which would have afforded a wealth of attractiveness to his lawns and gardens, and as a result his houses and barns are bare of shade, and of those beautiful clumps of trees which would have screened the unsightly, and shown off the interesting features of the house.

With the hope of encouraging tree planting, especially about our fruit farms, we give place to a paper in the Farmers' Institute report, by Mr. Alfred Brown, of Picton, Ontario, a member of our Association :

"Farmers generally do not take advantage of the very easy and sure way of adding value to their real estate by planting our native trees in neat lines along road sides and lanes, around buildings and yards, in waste or unsightly places, or bluffs that are too rough for cultivation. These places, planted with black walnut, I believe, will be as good an investment as the same area of apple orchard on suitable soil, although dividends will not be realized from the walnut timber as early as from the apples. American black walnut can be grown better by planting the nuts directly where the trees are wanted, as the walnut is a little difficult to transplant owing to the large tap-root and the absence of fibrous roots. This condition applies to most of the nut-bearing trees. The walnut begins to bear at Picton when planted about eight to ten years, and although the nuts are quite strong flavored they are relished by some people. For planting, the nuts should be gathered when ripe and not allowed to dry. They can be kept out doors by packing in a box of sand, or may be planted directly where desired. Cover the nuts three inches deep, mulching lightly ; keep down grass and weeds and use plenty of manure. When once started the trees increase in diameter about half an inch every year. American sweet chestnut is grown for commercial purposes mostly in the natural state, but when planted in the clearance makes a good shade tree. The leaves are nicely serrated and glossy, giving the tree a beautiful appearance.

Hickory nuts have grown quite popular in the markets, and in selecting for planting, only use from trees bearing good sized, plump meated nuts. These and the chestnut require the same treatment as mentioned for the walnut. Basswood, when planted in the clearance, forms a pretty, compact-shaped head, and besides being valuable as a timber, shade, and ornamental tree, it is a source of the best crop of honey pro-

FIG. 1286.—View of Mixed Forest Belt at Central Experimental Farm, Ottawa, July, 1897, showing growth of trees planted in spring of 1888.

duced by any plant grown in Canada, and as our forests are being destroyed it would be wise to have the basswood planted extensively for the encouragement of apiculture, for bees are valuable to fruit growers and farmers, as they insure fertilization of flowers. Basswood grows readily from seeds.

Sugar, or hard maple, our national emblem, should be planted broadcast everywhere where there is room for a tree, as it may be had in most localities for digging. It grows a symmetrical shaped head when properly planted and pruned The soft maple grows very rapidly, and will succeed on a greater variety of soils than the hard maple. Trees in our yard planted eight years are six inches in diameter and give plenty of shade for the hammock. Maples can be dug best with a strong sharp spade, cutting a circle around the tree twenty-five to thirty inches in diameter and lifting out the plant with what soil and leaves adhere to it. Cut off all branches and saw off the top not more than seven feet from the roots. The trees that have given us the best growth were one and a half to two inches in diameter a foot from the ground when planted. When growth starts rub of all buds except a few at the top of the bare trunk to form a head.

Norway spruce is the best evergreen for practical use in Ontario, either as a wind-break or as an ornamental tree. It makes a dense upright growth of uniform shape, and is very attractive planted alone or alternately with deciduous varieties. Keep trees well mulched, which comes nearest to their natural condition. The writer does not favor planting trees thicker than they are to remain, except where straight long trunks are required

for timber, for it requires more courage than most men have to thin out a row of trees when once they are established. The farmers at the Institute meeting at Glen Allan, estimated that a farm having 100 shade trees well arranged would sell for $500 more than a similar farm alongside, other improvements being the same. When young trees can be found not more than a mile from the place where needed, the 100 trees can be selected, dug, trimmed, and planted for $5 if the work had to be hired, but most farmers are strong-handed enough to plant 100 trees every spring.

Possible injuries.—(1) Where planted too thickly so as to form a wind-stop, which is not desirable. A free circulation of air might be prevented and thus encourage insects and fungus growth. (2) Encroachment, adjacent crops will certainly be injured, but a good wind-break or line of ornamental trees are well worth the land they occupy.

Decided advantages.—Evaporation is lessened and the moisture in the soil assimilated by growing crops instead of being hurried in the air by heavy winds. For illustration of this point, refer to Prof. Panton's experiment in the Report of the superintendent of Farmers' Institutes for 1895-6, page 60, which shows that wind hastens the moisture out of the soil. (2) Protection of bloom from cold, rough weather will ensure a good crop which might from exposure result in a light yield. (3) Snow and leaves are retained and help to retard fruit bloom in localities subject to late spring frosts. (4) Less injury is sustained from wind when trees are loaded with ice which ruins so many fruit trees; also the loss from windfalls is reduced. (5) Erect growth in fruit trees is difficult without protection from prevailing winds. (6) Encouragement of insectivorous birds. This advantage alone is worth the land and care required to have a good wind-break where the birds will build their nests and rear their young largely on insects that destroy our crops. These birds and their nests should be protected by legislation, including the extermination of the English sparrows, which are driving useful and friendly birds out of the country by destroying their eggs and taking possession of the nests for their own use. (7) A farm beautified by shade trees is enjoyed both by the travelling public and by the farmers themselves."

HORTICULTURE IN SCHOOLS.

WORK FOR OUR HORTICULTURAL SOCIETIES.

WE are no advocates for increasing the burdens of school children by placing in their hands a manual of Horticulture in which the art of cultivating fruits and flowers is reduced to a science couched in technical terms, and thus necessarily made distasteful to our young people.

But if some means could be devised of giving practical training to such scholars as desired it, in a school garden, it would be a pleasant diversion from the severer studies, and at the same time give the best training to the eye and hand, resulting not only in a generation of farmers better skilled in the art of gardening, but also with more taste and inclination for to pursue it. A writer in Vick's Magazine says —

"The Horticultural Society of Massachusetts is trying the following plan: Cash prizes of $15, $12 and $10 are offered for school gardens; these prizes not to be awarded on exhibits of ordinary garden plants, but on wild plants such as ferns, fancy grasses, violets, asters, vegetables and grains. Prizes are also awarded on herbariums made up by the school children. This plan cannot fail to awaken interest among the little folks, as the desire to be first in everything is as strong in them as in those of larger growth.

"The Germans, always noted for their love of flowers, have started a school of gardening for girls in one of the suburbs of Berlin. There are several pupils, who wear a uniform of dark gray material, consisting of a bodice and skirt, the latter being made in such a way that it can be shortened at will when at work; they do all the work of the garden, raising vegetables, flowers and fruit, for all of which a ready sale is found. Many of them are fitting themselves for head gardeners, and some have already left the school to go to such places. In a large place where under gardeners are kept, there seems to be no reason why women cannot fill the position of head gardeners, if they fit themselves for the work.

"In Russia it is a common custom to have school gardens in connection with the village schools: the use of the land is given by some landlord or hired by the government, and the small expenses connected with the work are also provided for in the same way. The work is taught regularly in the schools, usually by the school master, who has received his instruction from some practical gardener. Some sections of the country being tree-less, the work is almost entirely devoted to the raising of trees, which are given out among the children, when of sufficient size, to plant at their homes. In other places, grapes are the principal crop, while in others, silk worms are raised and mulberry trees cultivated for them to feed on."

GARDEN HINTS.

THOSE who contemplate growing tomatoes for the English market, should sow seed at intervals so as to keep up a succession of fruit. A special variety must be selected which does not grow too large. The Ignotum was the variety sent forward last year, and the complaint was that it was too large. In instances we selected only the small size, of uniform grade, and these sold at good prices. We allowed the plants to spread as they chose, without any pruning, and the yield was good but we notice that some writers advise confining them to a single stem. No stopping, they say, of the leaders is necessary or advisable till at least four clusters of fruit are set on the stem. No superfluous side shoots should however be allowed to grow, but be kept instead closely pinched out. The side leaves should be left on the single stem, only the side shoots being removed. Otherwise the stem would be laid bare and this is undesirable.

FIG. 1287.—BED OF MUSHROOMS.

THE cultivation of this nutritious esculent is a very simple matter, and requires only ordinary intelligence and care. The materials needed are fresh horse manure, good soil and live spawn. The manure should not be too short, as it does not combine the necessary qualities. Long strawy litter plentifully mixed with short manure, makes by far the best beds, as it does not heat too violently, decomposes slowly, and retains its heat for a long period. Put in a heap and turn every 3 or 4 days to permit the escape of noxious gases, and prevent burning. Manure that has become white or "fire fanged" and mouldy is worthless for mushroom beds. When ready for use it should not possess an offensive odor, and should be as hot as can be borne comfortably by the hand. It should also be moist, for if too dry the decomposition of the mass will be rapid, and the bed exhausted before the crop has matured. If a shed or cellar is not available they can be grown in the open air, but the time necessary to perfect a crop will be longer. Make the beds 3 feet wide at the base, 2½ feet high, tapering to 6 inches at the top, and of any desired length. The manure when in proper condition, should be quickly handled to prevent the loss of heat, and be beaten down to make the heap firm and compact. When of the desired size the sides should be dressed down neatly and the heap covered with long litter. Allow this to remain till the heat has decreased to 90°, at this point the bed is ready to receive the spawn, which is done by raising the manure with the hand and inserting pieces of spawn 2 inches square, 9 inches apart each way. Liberal use of spawn results in larger crops. Many beds fail to give satisfactory returns owing to the bricks being broken in too small pieces. At the expiration of three days the spawn will have commenced to run, and the bed is in proper condition for covering with soil. Any good fresh soil will answer, but turfy loam from an old pasture or meadow is preferable. If the soil is poor add a liberal quantity of bone meal. The earth should be just moist enough to press together nicely; if too wet when put on it is apt to crack and thereby permit the heat to escape instead of permeating the heat evenly. If the soil is light put on to the depth of 2 inches, but if heavy 1 inch will be sufficient. The bed should again be covered with the litter, and it should remain on till the bed is exhausted, only removing it to gather the crop. If the bed shows signs of dryness water on top of the litter, and not directly on the soil.

Mushrooms can be readily grown in cellars, stables, sheds or pits. The requirements as to manure, soil, etc., are similar, but the season can be prolonged and the temperature regulated more easily than in the open air. Many are successfully grown on the shelf in an ordinary cellar, and yield sufficient crop to compensate the grower for his effort. Spent hot beds also meet the requirements of the mushroom in a large measure. Bits of mushroom can be inserted before the bed has become cold

between the plants. When the plants are removed keep shaded with long litter, and water occasionally if necessary. The space under greenhouse benches or stagings will suit them exactly, using materials in same manner as described. They will also grow admirably on top of the bench, using cloth for shading instead of litter. The time required for a bed to come into bearing is three to six weeks.

In gathering the crop do not cut with a knife, but pull them up with a twisted motion.—J. A. SIMMERS, Toronto.

MUSHROOMS ON SHELVES.—The Horticultural Times says, short horse droppings, partially dry, thrown in a heap and allowed to ferment, form the right kind of material for raising mushrooms artificially. A good way is to build shelves on the wall of a shed or cellar, fill each full of the material; press the droppings close; cover with two or three inches of soil. Allow the bed a few days for the heat to rise, when it is ready for spawning. The spawn is sold by seedsmen in the form of bricks, which have to be broken up into small pieces about the size of a walnut, and set into the bed just below the soil. If the bed is right, having gentle heat and a little moist, not wet, the spawn will quickly spread through the whole mass, and in about a month the little white buttons will appear all over the beds, and in a very short time after the full-sized mushrooms. Any position that can be kept not warmer than 65° or 70°, and not colder than 50°, will grow them the whole year through, but beds require to be renewed after a second crop, which can often be had from the same spawning. Any place light enough to work in will be light enough to grow mushrooms; indeed, some grow them without any light.—Horticultural Times.

MASSACHUSETTS HORTICULTURAL SOCIETY.

THIS is one of the oldest and most respectable societies of the kind this side the Atlantic, and a study of its methods would no doubt be suggestive to many of our newly formed societies in Canada. We do not wish to commend its extensive prize list, for in our opinion, a large expenditure of time and money in this direction cripples any society, and hinders its general usefulness, by confining the benefits to a few specialists. What we aim at in our affiliated societies is the general good.

One means to this end is the meetings for hearing lectures or reading and discussing papers. The programme of the above named society has come to hand, and provides for ten winter meetings of an hour or two each, to be held at 11 o'clock every Saturday morning, except the 1st Saturday which is reserved for business. The following is the scheme and addresses:—Jan 8th, The Business side of Fruit Culture, J. H. Hale; Jan. 15th, Horticulture in Holland, with stereopticon illustrations, by Mr. Farquhar, Boston, Mass. Jan 22nd, Originating new Vegetables, Hon Aaron Low; Jan. 29th, Nuts and Nut Culture, F. M. Bartram; Feb 12th, New Notions about old Insects, Professor Slingerland; Feb. 19th, Trees in Streets and Elsewhere, W. R. Smith; Feb. 26th, The National Flower Movement; March 12th, The Value of Nature Studies in our Schools, Geo P. Powell; March 19th, Resistance of Plants to Parasitic Fungi, Professor

Burt; March 26th, Native Ferns of New England, illustrated with numerous slides, H. L. Clapp.

Why should not our Ontario Societies take a hint, and plan out a course of meetings for the remaining months of the winter, with one subject for discussion at each meeting, introduced by one capable person. Eleven o'clock Saturday morning might not suit every where; for often an evening meeting will be preferable.

MULCHING STRAWBERRIES.

IT is a general practice among fruit growers, especially those in localities where the winters are severe, to give their strawberry beds some kind of mulch after the ground becomes frozen in the fall.

The mulch serves for several purposes, winter protection to the plants, summer conservation of moisture, cleanliness of berries and subjugation of seeds during the fruiting season.

It may be of clean straw, marsh hay or forest leaves. Fine marsh hay or leaves is the best, but one must be governed by the variety and cost of the material at hand, especially an extensive grower, but whichever material is used, it should be free from foul seeds, and be evenly distributed over the plants that the plants are not smothered.

It should be only thick enough that the plants are not discernible. As soon as freezing weather is past in the spring, this mulch can be worked away from over the plants and into the middle of the row, leaving that which is under the plants undisturbed, so as to keep the berries free from sand.

Should the season be dry, this mulch will be of much benefit to retain moisture for the development of the fruit, as the strawberry is 82 % water.

It likewise serves the purpose of a cultivator, preventing the growth of weeds. When the fruiting season is over, we mow the vines over, and as soon as dry enough, are burned, selecting a day when a brisk wind is blowing so the vines will burn quickly without injuring the crowns of the plants:

The cultivator is kept going often enough to keep the ground mellow and the weeds subdued. By winter a new growth of vines have appeared and are prepared to yield another crop. This method has enabled us to keep our beds in bearing much longer than by any other method we have yet tried.

Unless the ground is previously free from all foul seeds and grasses, this plan will prove a failure. It is necessary that some cultivated crop be grown upon the ground before setting to plants. Buckwheat has proved a good crop to grow on my soil. Sod ground should be avoided as it is quite apt to be infested with the larvæ of the May beetle, commonly known as the white grub, besides several other injurious insects.

B. H. WOOD,

Kalamazoo Co., Mich.

CHRISTMAS FRUIT IN LONDON, ENGLAND.

SINCE Ontario fruit growers' are so deeply interested in the export of their fruit to Great Britain, and have reason to hope that this trade will be successfully opened during the coming season, by means of improved cold storage provisions, and the experimental shipments carried on under the supervision of Prof. Robertson, we give some extracts from the Daily Standard, concerning the fruits on the Christmas market.

A stroll round the wholesale fruit markets of the Metropolis, and a visit or two to the Pudding-lane sale-rooms and the docks and wharves, will satisfy anyone that the prospects, as far as the Christmas supplies of fruit are concerned, are better than they have been for many a year. Naturally, the question of Christmas fruits leads one, especially when experienced in the ins and outs of the enormously expanding fruit trade, to state a few facts, first of all with regard to the apple—the king of fruits. At the present time we are deriving our outside supplies from Belgium, Canada, France, Holland, Italy, Spain, and the United States. They are coming in in fair quantities. During one week lately we received twenty thousand bushels from Canada, thirteen hundred from France, two thousand five hundred from Italy, four thousand three hundred and thirty from the United States, and fourteen hundred and one from Spain. These quantities, added to other but insignificent supplies, and the receipts at other ports outside London, bring up the weekly total of apple imports to over fifty thousand bushels.

On the other hand, the home stocks are short, and especially of choice samples, for which an unlimited demand prevails at high prices—at prices, it may surpise the general public to know, higher than have been known in the history of the fruit trade. Whilst we have a goodly display of grand Nova Scotian Ribstons on show, of deeper-colored Blenheim Orange, and of delicately-hued King also of magnificently-colored American Ben Davis, Baldwins, and the pale but golden-skinned Newtown Pippins, we have in spite of the shortage in the home stocks, English apples far superior to those named above in every point. We have some grandly-colored Blenheim Orange of enormous proportions, of perfectly-shaped King, big mellow-looking Ribston Pippin, Giant Golden Noble and Bismarks, the latter a splendid fruit, for sale, Lane's Prince Albert, and last, but not least, Bramley's Seedling, one of the finest cooking and heaviest croppers known; also Wheeler's Russet and Old Nonpareil, that old-fashioned but exquisitely flavoured apple, of which tradition has it that it came from France, and was set by a Jesuit in the days of good Queen Bess. These English apples are referred to simply to show that, in spite of the advances made by the foreign producer, the British apple, as regards size, color, lusciousness, flavour, and value, stands without a rival, and in this year of Jubilee holds its own—aye, and easily—against all comers. What shall be said of Bess Pool, that finely-striped red apple, the best of which come from Herefordshire, and which keep well from November till March, and is such a pomological dainty that few except the richer classes ever have the pleasure of tasting it. The seedling tree of this apple was said to have been found by a country lass, in a wood. She, gathering some of the fruits, carried them to her father, the keeper of the village inn, from whom grafts were in due course obtained, and the variety handed down to posterity. The name of the little lassie was Bessie Pool, hence the name of the apple.

Pears deserve more than a passing notice. Fifteen and twenty years ago, enormous pears from Paris used to be marked up in the Grand Row at Covent-garden Market at ten, twenty, and thirty shillings each, and they were even lent out for table decoration at West-end parties. They were immense fruits, and usually created much astonishment when seen. So with the large supplies of Autumn pears. French fruits have monopolised the English markets During the past few months, however, they have been eclipsed by the superior pears from California The Californian Easter Beurrés are superior to the French ones. So with the Beurré Diel, Glou Morceau, Winter Nelis, and Beurré Clargeau. A few pears are now coming in from Guernsey and Jersey, and the Channel Island Chaumontelles, of course, are always much sought after, when they are large and well colored. The English supplies are so short as to be hardly worth a notice.

And then what of the grape? Only a day or two ago, when passing through Covent-garden market at five o'clock in the morning, amidst a flare of gas-jets, the rush of the loaded porters, the continued hubbub of the busy buyers and the shrewd salesmen, growers, and commission salesmen, we were particularly struck with the superior quality of the fine punneted grapes especially, which form one of the most attractive features of the Christmas fruit trade at Covent-garden market. Many of these hothouse grapes were packed in shallow, flat-shaped handle baskets, telling at a glance they came from Guernsey. whilst the deeper grape baskets denoted their arrival overnight from Worthing and kindred centres. In addition were to be seen mammoth-berried Gros Colmar grapes from Scot-

land, and some choice Alicantes from the borders of Wales. The supplies also come from Potter's Bar, Finchley, Fulham, Hampton, Barnet, Acton, Tottenham, Uxbridge, and other places too numerous to mention. There are also plenty of the famous white grapes, Muscats of Alexandria, on sale. Although the stocks both of white and black grapes on hand are heavy for the time of year, there will be little trouble in clearing out the bulk for the Christmas trade, and at fair prices. True, prices are vastly different to what they used to be some years back. Instead of making from ten shillings to thirty shillings a pound, traders are able to offer better grapes at from one shilling and sixpence to seven shillings and sixpence a pound, and realize greater satisfaction from the latter prices than they could from the former. The British hothouse grape is the wonder of the world. It finds its way to Paris, Berlin, and even New York, where it is sold at fancy prices by the retail fruiterers of the cities named. There are growers in the United Kingdom who actually raise grapes in forcing houses of an estimated total length of between ten and twenty miles. The houses run from fourteen to sixteen feet in width, and literally cover acres of land. For the cheaper class of grape trade there is the Spanish Almeria, which is packed in barrels, holding from forty-eight to seventy-two pounds of fruit and cork dust combined.

The retail shops are now all ablaze, as it were, with bright colours, the colours of dainty, delicious, ripening fruits. They have custard apples from Madeira, grapes from Belgium, apples from Italy and distant California, and even oranges from the land of the Turk, telling us once again that, in addition to consuming our home surplus, which are not so light as many people imagine, to satisfy the festive appetite of the nation our merchants and distributors have to draw our supplies of Christmas fruits from almost every centre of production under the sun.

THE PEACH.

AS this fruit is a native of a southern clime, and therefore somewhat tender, we must give it all the advantage we can in the way of location and culture if we wish to succeed with it in this country. An elevation near a large body of water is preferable, with a light sandy loam, and natural drainage to the depth of ten or fifteen feet. When these conditions cannot be secured we cannot look for any great measure of success.

By planting a tree or two on the north side of a building we can often grow a crop of this fruit in sections where they would fail without the protection thus afforded. Hardy varieties should always be selected when planting outside the "peach belt." Early Barnard, Tyhurst, Longhurst, Golden Drop, Hill's Chili, and Lemon Free are among the hardiest sorts thus far tested, and all of them good kinds. In peach sections the following is a good list, named in their order of ripening: Early St. John, Early Crawford, Fitzgerald, Yellow Rareripe, New Prolific, Tyhurst, Elberta, Golden Drop, Longhurst, Hill's Chili, Late Crawford, Jacques' Rareripe, Lemon Free, and Smock.

Cultivation should begin in early spring, and discontinued the first of August. This method of culture will induce early growth of wood, also early ripening of the same, which is very essential to success. At the latter date crimson clover should be sown among young trees to give a covering for the soil through cold weather, which protects the roots of the trees. Plow under in early spring and cultivate again as directed above.

The black aphis is the worst insect enemy we had to contend with thus far. They do most injury to young trees newly planted. Perhaps the best remedy we have is to treat the young trees before planting by soaking a few minutes in strong tobacco water. We take any refuse tobacco, leaf or stems, for this purpose. When this is done and good culture given there is little trouble after from this cause.

W. W. HILBORN,
Experimenter at South-western Station.
Essex Co., *Ont.*

ONIONS.

THE following is a portion of a paper read by the well known seedsman, J. J. H. Gregory, before the Massachusetts Horticultural Society:

As regards soil, onions will grow on any soil from muck meadows to clay loam. They succeed on soil so gravelly that after a rain there will be places a yard square on which not a particle of soil can be seen. Muck soil will not make a first-class onion without silica added in the form of gravel or sand. Two hundred loads of gravelly, gritty soil should be carted on to an acre; otherwise the onions will be coarse, thick necked, of bad color, soft and spongy, and poor keepers. In other respects the muck may be treated like upland soils. Muck is very rich in latent nitrogen, and if manure is applied it should be bone and ashes rather than barnyard manure; this remark will apply not only to onions, but to any crop in such soil. Thin upland soils need humus; muck does not. A gravelly, sandy loam gives onions the strawy color so much desired. Very heavy manuring gives earlier, harder and thicker bulbs and causes them to ripen all at once. To put in more manure than is really needed makes the crop so much earlier that it pays well. The speaker mentioned an instance of a Revere cultivator who by extra manuring sent sixty barrels to market in one day, which brought a far higher price than the general crop.

A weedy soil should be avoided Old soils add greatly to the expense of raising this crop. There are three weeds which are especially injurious in an onion bed — twitch grass, pursiane and chickweed. In regard to the first, money is saved by taking out every spear before planting. The soil should be lifted lightly with a fork and the grass drawn out. Pursiane is a very peculiar weed; it not only produces innumerable seeds, but the speaker had found that every piece into which it is cut in weeding will take root. It is, however, not a tall, smothering weed, and is said to indicate land rich in potash. Chickweed is the worst of all weeds for onions. It washes over the land, and sticks to your boots, and is carried about in that way. If a bed is badly infested it is better to discontinue cultivatvating onions on it and try new land. Where grass land is broken up the sod should be well rotted by other crops before planting onions; they can be raised the second year from pasture sod and in three years from mowing sod. In pasture land there are few weeds, and it will warrant a large outlay for beets, onions and similar crops. As much as seven hundred bushels of onions per acre have been raised on black muck soils without manure. Onions will follow carrots, potatoes or corn kindly, and will follow cabbages and mangel wurzel, which have drawn heavily on the soil for potash, provided an extra dressing of this element is given. Last year the speaker planted a bed, part of which had been in carrots and part in mangel worzel the year before, giving an extra quantity of potash to the latter portion, and no difference could be seen in the crop on the two parts. It used to be thought that onions could be raised successfully for many years on the same ground, now we can get only a few crops off the same piece of ground. A deep, strong soil is best; it should have sufficient moisture and be level or nearly so, else the wash of the land will cover the young plants. The top onion is sometimes planted in August for May marketing The Egyptian belongs to a distinct class; it is of

irregular form, and is planted in September, and starts early in the spring—earlier than the weeds. They do not have to be planted but once. Onion seed raised here is much better than foreign; only about fifty per cent. of the latter will grow. Sets may be planted about the middle of May, three inches apart; they give a great deal of work.

In preparing the ground for onions, Mr. Gregory recommended the use of a gang plough and Meeker harrow, which does the work of raking in half the time required to do it by hand; the competition is such that we must economize in every possible way.

As to manures, onions are great feeders and like something to select from. Mr. Gregory advised applying at least ten cords of barnyard manure per acre, or its equivalent; farmers in the vicinity of Boston use twenty cords of stable manure. But he thought it better to use half the quantity of manure, and the other half in commercial fertilizers, or cheaper yet, to use all fertilizer. The latter can be applied at any period of growth, but there is danger from using a phosphate continuously. In Bermuda, the onion growers use part sea manure and part commercial fertilizers A neighbor of Mr. Gregory uses ten cords of a mixture of barnyard manure, sea manure and nightsoil, a very concentrated manure, probably equal to double the quantity of ordinary barnyard manure. Mr. Gregory recommended the application of three hundred pounds of nitrate of soda per acre; or, if the crop looks feeble, a complete fertilizer may be used. In all farming a good deal of manure seems to be misapplied, and he suggested the use of less manure and more nitrate of soda.

In a crop of 700 bushels of onions there will be 58 lbs. of potash and 53 lbs. of phosphoric acid. A cord of average stable manure, weighing 4500 lbs., will contain 18 lbs. of potash and 22 lbs. of phosphoric acid, and 20 cords would contain 360 lbs. of the former and 440 of the latter. If this quantity of manure is applied every year for twenty five years we shall have put into the soil 9000 lbs. of potash and 11,000 lbs. of phosphoric acid But the crop during this time will have contained only 1450 lbs. of the former and 1325 of the latter, leaving in the soil an excess of 7550 lbs. of potash and 9675 lbs of phosphoric acid. These substances will, if the land is ploughed eight inches deep, be distributed through 227 cords of soil per acre, which would give an average of 33 lbs. potash and 42 lbs. phosphoric acid per cord, so that the whole soil would average more than half again as rich in potash as average barn manure (that is, in the proportion of 33 to 18), and nearly twice as rich in phosphoric acid (in the proportion of 42 to 22). This soil would itself have become manure, and as a dressing for grass land would be worth half as much again as barn manure. The speaker suggested using no barn manure, and nitrogen only in forms that will meet the wants of the crop as it comes along. This should be done two or three times during its growth.

There are three classes of seed sowers —the finger-stirrers, force-feeders and agitators. The speaker preferred the first two. There is one that plants two rows at a time. Two men will produce very different results with the same machine or with seed from the same bag. In Connecticut the seed is sometimes dropped in bunches, alternating with carrots; the carrots then have an opportunity to make a late growth. From three and a half to eight pounds of seed is sown on an acre; four pounds is about the usual quantity, but four and a half or five pounds may be used on new soil,

and from five to six pounds on very rich soil. It is important to plant early; certainly before the close of the first week in May. The rows should be from twelve to eighteen inches apart. If there are any blank spaces, they should not be filled in with tomatoes, cabbages or other large growing plants.

As to weeding, Mr. Gregory said—Be sure to weed just as soon as a row can be seen. It is a good plan to sow radish seed with the onions, that the rows may be distinguished more plainly. If two or three rainy days come, this means an extra weeding. He had tested twelve different sorts of weeders and liked the horizonal best. One kind (which he thought well of) weeds two rows at a time. There is one, called the finger-weeder, which gives the operator very complete control over his work. With a sliding weeder there is a danger of cutting or bruising the bulbs. It is an excellent plan to double slide them as we go along, first close to one row and then close to the other. They should be weeded from five to seven times during the season.

For the onion maggot, Mr. Gregory had found hens and chickens an effectual remedy. A hen and a brood of chickens will take care of from an acre to an acre and a half. Gas lime has been found effectual, but it abounds in chlorine and must be used with care.

In harvesting green ones should not be mixed with dry ones. When most of the tops are down there is danger of their re rooting. On highly manured land they will be ready to harvest earlier than land not so much enriched. A cultivator with a scraper attached is a good thing to clean the bed with. He freezes a part of his crop, piling them fifteen inches deep and from fifteen inches to two feet from the wall of the building, the space between the wall and the onions being filled with hay; they are then covered two feet deep with hay. They must not be touched or handled while frozen. For marketing they should be evenly assorted; many small ones cause extra loss in price.

REMOVE THE OLD RASPBERRY CANES.

SOME advocate the leaving of the old raspberry canes after fruiting—claiming that they are not only beneficial in protecting the young bushes during the winter, etc., but that their mission is not really filled duriug the year, holding that the next year's crop is impaired if bushes are removed before spring. Now the former claim may be all right in some locations where the winters are extreme, and where a deep snow is beneficial, as the cane will hold the snow and aid in keeping the young growth from being broken down, but the latter we cannot see. When a bush has borne its fruit and is dying off, as all strawberry bushes do, then we advise making a business of cutting out all the old canes and burning them. Do not put them in a pile or throw into the wood lot. Why this care? To explain—Our raspberry fields were a pleasant sight to see in the early summer, but before their fruit was ready to pick, the bushes commenced to show signs of sickness, and the fruit ceased to grow, and in instances dried up. In examining the old wood we found out the cause, four-fifths of the canes were infested with the horer, from one to ten being found in each cane; these pests were in different stages of development, many ready to come out and start business on the young wood for another season, while some resemble ant's eggs. And this in the heart of the cane, of course, had taken the vitality out of the bush; it is needless to say that every old bush was speedily cut out and burned.—Green's Fruit Grower.

STONEY CREEK FRUIT GROWERS.

A VERY large and important gathering of the farmers and fruit growers of this district gathered at the Farmer's Institute meeting which was held at Stoney Creek on January 5th, 1898. Matter of interest to fruit growers were discussed by Prof. H. L. Hutt, Mr. W. M. Orr and L. Woolverton.

The latter read to the meeting a paper showing some of the results of the experimental shipments of tender fruits to Great Britain during the past season, and the prospects for the future. The fruit growers were deeply interested in this matter, and asked numerous questions regarding the English markets and the prices which can be obtained for our first class fruit, providing they can be placed there in prime condition. Samples of packages which had been used, and which were proposed for 1898, were exhibited, and after some discussion the following resolution was moved by E. D. Smith, of Winona, seconded by Frank Carpenter, M. P., and passed unanimously :—

Resolved, That we, the fruit growers and farmers of this district, are deeply interested in the success of the trial shipments of tender fruits in cold storage to Great Britain, under the auspices of the Dominion Government, and we earnestly desire the Government to continue these trial shipments on an extensive scale until permanent success or failure is fully decided.

Further, Being convinced that shipments by individual shippers on their own account, are not likely to be made, and never can be expected to be profitably made unless an even temperature of an absolute degree is guaranteed on shipboard, therefore, we respectfully urge upon the Government the desirability of securing, if possible, from the steamship companies an absolute guarantee of the temperature somewhat within a reasonable distance of the ideal one for the purpose, say 33 to 38 for tender fruits in cold storage, if 35 to 36 is found to be the proper temperature.

Further, We are of the opinion that, if the temperature of the compartment in which winter apples are usually carried can be kept the same as the temperature outside the vessel, we would have no complaints about wasty and rotten apples upon their arrival in Great Britain. We are of the opinion that such a temperature could be secured at a trifling expense by means of fans properly constructed and worked on the voyage.

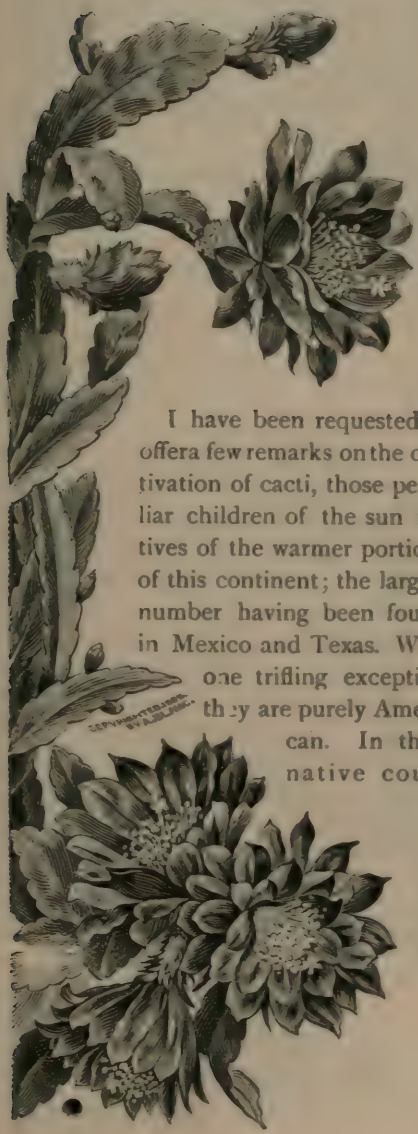
Further, We believe that, for carrying grapes to Great Britain, possibly such a temperature would be cheaper and better than cold storage, if also attended with thorough ventilation.

We also would urge the necessity of uniform and uniformly good packing of any tender fruits sent forward, and uniformity in packages used by all shippers, as we believe it would be very unfortunate if any inferior fruit should be allowed to go forward, or that a great variety of packages of various sizes and shapes should be placed upon that market.

FOLIAGE FOR BOUQUETS.

THOSE who make bouquets for themselves or others, are often troubled for want of a suitable green to work in. The rose geranium is a general favorite, but young, strong growing plants potted or planted out in very rich soil should be kept in plenty, so that you can cut freely, and as soon as the plant gets old and woody and the leaves decrease in size and rankness, throw the plant away and get a fresh one. But geranium leaves are not suitable in all places, and something else must be had. The rank growing grasses are very serviceable though rarely used; but there is one that is worthy of a place in every garden, and that is the old-fashioned ribbon-grass. How its familiar white and green carries me back to boyhood—to my old mother's garden, and the bouquets she used to make. It will grow anywhere, but will amply repay you for a rich soil and plenty of water.—Vick's Magazine for November.

CACTI.



I have been requested to offera few remarks on the cultivation of cacti, those peculiar children of the sun natives of the warmer portions of this continent; the largest number having been found in Mexico and Texas. With one trifling exception they are purely American. In their native countries they grow under very varied conditions. The Phyllocactus and Epiphyllums are Epiphytes or Air plants growing on trees without any soil, the wet ground and tropical heat furnishing the necessary moisture. Here they will not grow as air plants but thrive in sandy soil, while the Epiphytal Orchids found in the same localities can only be grown in moss instead of soil and in warm moist conservatories. Nearly all the other varieties of cacti grow on barren sandy plains or in crevices of rocks, in localities where the heat of the sun is intense and the rainy season short. Botanists tell us that the skin or bark of cacti has very few breathing pores, resembling in this respect the skin of apples, pears, plums and other fruits so that they absorb the water through their roots during the rainy season, and enjoy the strong heat where plants with soft porous leaves could not live.

Growing under such different conditions the problem with cultivators has been to find the most suitable soil to grow them in, and the opinions have been nearly as numerous as the cultivators, and as they have done well in very different soils I think we may conclude that they will grow in any soil if sufficiently open and porous so that water may pass freely, water-logged soil being certain death to cacti. I have found sods from a sandy knoll suitable, by

paring off the grass the under part is a net-work of fine fibrous roots in sandy loam in which they thrive. The strap leaved varieties can have some leaf mould added as they can stand richer soil. Formerly cacti were kept in pots the year round, but now nearly every one plants them out in summer. Mix the ordinary garden soil with an equal quantity of sand, and have the situation elevated so that water will run off. They enjoy the sun and rain and the growth they make is surprising. Their fresh healthy appearance is a contrast to the shrunken specimens in pots. Phyllocactus when planted out enjoy the heat, but should be shaded from direct sunlight which is apt to scald and burn them. Regarding the different varieties, these are so numerous and varied that time will only permit the briefest mention. The Phyllocactus the flat or strap leaved spineless family are the best known, easily grown and generally most satisfactory. Some are day and others night bloomers, and all are very floriferous. The variety Latifrons, or the Queen cactus is one of the best when a good size can be depended on for plenty of flowers every summer. They are pure white, six inches in diameter, fragrant, opening at night and closing next morning. This plant is often wrongly called "The Night Blooming Cereus," which is an entirely different plant, it is Cereus Grandiflora of a semi-climbing habit with rope like stems, seldom thicker than a man's thumb, having four to eight slight angles or ridges. The flowers are ten inches in diameter with a rich perfume, but while this plant is very easily grown and largely used to graft other varieties on, flowers are very rare, so that Latifrons is a much preferable plant to grow. The Epiphyllums or crab or lobster cacti are easily grown, and profuse bloomers in February and March, being of a rather drooping habit they are improved by being grafted on the Pereskia stock, or on some of the Cereuses and make handsome umbrella like plants and less liable to damp off at the neck. The Cereus are a large and very varied family, from the creeping Flagelliformis or Rat tail up to Cereus giganteus fifty to seventy feet high in a straight unbranched column, all are easily grown and mostly free bloomers.

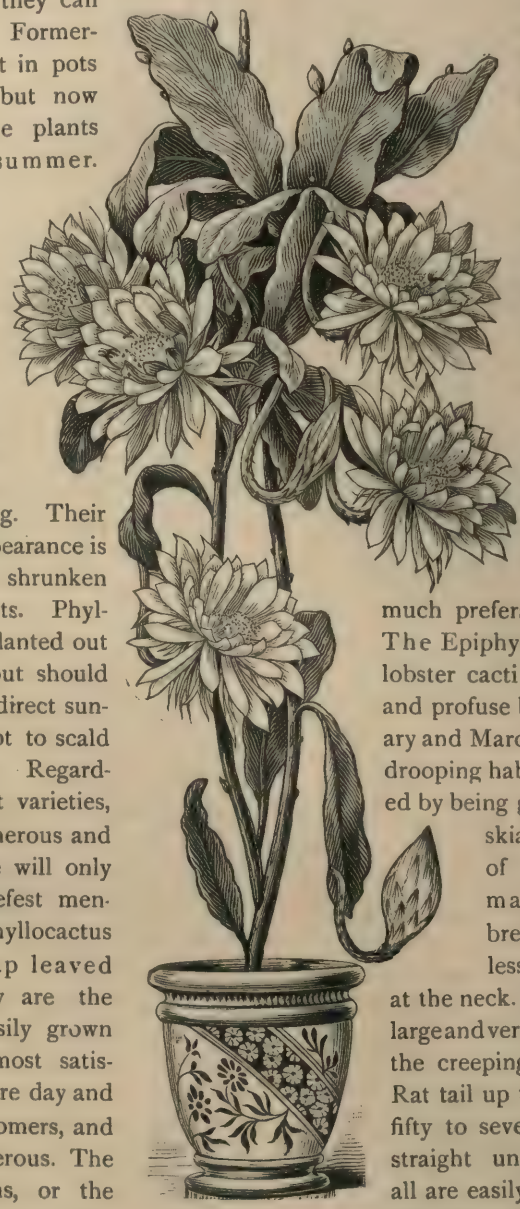


FIG. 1288.—PHYLLOCACTUS LATIFRONS

There is a subsection of which Pilocereus senilis "The old man Cactus" is the best known representative being covered with long white

FIG. 1289.—NIGHT BLOOMING CEREUS.

hairs. It is one of the wonders of plant life, I have never heard of its blooming and think a flower on it would be an incongruity. Of the round spiny Hedgehog cacti there are various families and numberless varieties, nearly all are free-flowering, and their various colored spines make them handsome plants when not in flower. The Opuntia family are excellent bloomers, the great drawback to their cultivation is their spines which are very fine and slightly barbed so that they pierce the skin readily and are painful and difficult to remove. In districts where they live outside, and do not require handling, they make magnificent display of brilliant flowers, a clump in bloom is a sight worth going to see. The conditions necessary to success in growing cacti are more easily provided than for most other plants, and may be briefly summed up as follows. Sandy porous soil, small pots, all the sunlight and heat possible in summer, with plenty of water, but cool and dry in winter. If the temperature is over 50 degrees in winter they require some water to prevent drying out altogether, but not sufficient to start growth, they require to rest.

FIG. 1290 —OPUNTIA.

As a class they are not much troubled by insects or subject to disease. The mealy bug is about the only troublesome insect, and for that spraying with alcohol is a certain remedy.

Rot is caused by over watering as soon as seen cut off the decayed part back to the fresh, lay in the sun for several day until the cut has cal-

FIG. 1291.—CEREUS.

FIG. 1292.—CACTI IN MEXICO.

loused, then insert in sand, but not deeply. Keep shaded and slightly moist until roots form, than replant in proper soil. This is the common method of propagation by slips or cuttings.

I trust these remarks may increase the interest in this curious and beautiful class of plants, as I am certain every one will be delighted in growing a few cacti.

JAMES LOCKIE.

GLADIOLI FROM SEED.—In spite of all that has been written, few amateurs seem to understand how easily and successfully blooming bulbs can be produced in a single season. The question of seed is of great importance, as practically all the seed offered is from self-fertilized flowers, giving varieties of so little individuality as to rarely reproduce characteristic flowers. For the grower of a few packets of seed, there is no better way than to sow it in a pot of sifted sandy loam, made richer in the lower strata, to be ready when the plant most requires it. Cover lightly and sift on more if needed, as the bulbs are formed one inch and more below the level on which the seed is planted. Keep shaded until the blades appear, about twenty days, but do not interfere with the circulation of air. The pot may then be plunged in full exposure to the sun, in the cold frame or open ground, and kept well watered during the period of active growth, about four months being necessary to develop the corn. By sowing the seed in October under glass and ripening off in March, with a rest until May and a summer in the open ground, larger bulbs can be produced and a season saved. H. H. GROFF.

PLANT FOR DINING TABLE.

THE Rural New Yorker commends the feathery little palm Cocos Weddeliana, as the best for permanent use on the dining table. A plant in a four-inch pot, stippled into a pretty jardiniere, makes a very attractive ornament, and, when more elaborate decoration is desired, it may be used as a counterpiece for ferns or flowers. It has a very light and graceful appearance, yet it stands the conditions of an ordinary room very well. Do not take it out of the ordinary red earthenware flower-pot and plant it directly into the jardiniere, because the infallible result will be poor drainage and sour soil, causing damage to the roots. A covering of green moss, put over the top of the soil, will improve the appearance, and also prevent the earth from drying out so rapidly. The foliage should be well sprayed or sponged every week.

A cheap but attractive plant for the table is the showy variegated Wandering Jew, Tradescantia zebrina, which grows rapidly under unfavorable conditions. Small plants of the Silk oak, Grevillea robusta, are excellent for the same purpose; their prettily-cut leaves are very graceful, and the plants bear rough usage with equanimity.

WORK IN THE GREENHOUSE.

THE principal work the coming month is to guard against frost. There will be much dull weather, and the fires must be kept up to do the work of the sun as far as possible. When it can possibly be done, air should be given, a little at least every day. Let your plants grow slowly; don't attempt to force them too fast or the growth will be weak and inferior. Great care should be exercised in watering. It is best generally not to use the hose at this season, but to go over the plants with a watering pot and water when the earth appears dry. Sub-irrigation is, of course, the best for most crops.

Should the green fly appear, apply tobacco, either the liquid or by fumigation. After a spell of dull weather, when the hose has been withheld, the red spider will sometimes get a hold. When a bright day comes, thoroughly wet the walks, which the sun's rays will cause to steam; this moisture is sure death to the mites. If you heat by steam, fill your house when the sun begins to shine and the effect will be to destroy every red spider.

Look over the bulbs that were potted in November and December, such as tulips, hyacinths, lilies, etc. Those that have filled the pots with roots may be brought in. Put them at first in the coldest part of the house, where the temperature will not go above 45° if possible. After a week, and the foliage has taken its green color, heat may be increased until the night temperature is 65°. Water as much as the plants require. If care is taken for a few weeks their abundant bloom will amply repay us. At this time of the year dealers often offer bulbs at very low prices. My advice is not to buy them; their vitality is dried up and it will cost you more to restore them, adding your time, than you can sell the flowers for.

It is high time plants were under way for Easter. Lilies should be above the pot. Dormant roses can be flowered in pots. Geraniums should have a shift and be given more room; they will make fine plants for Easter.

All kinds of bedding plants can now be propagated. Protect the cuttings from the sun. Keep your plants growing. As fast as "slips" appear, propagate them.

Seeds of petunia, pansie, hollyhock, canna, marguerite, carnation, tuberous begonia, centaurea gymnocarpa, coleus, dahlia, heliotrope, lobelia and vinca should be started soon.

If your cuttings damp off, it is generally because of a fungous disease that often is found in beds that have been used. After a batch of cuttings has been taken out, water the bed with an ammoniacal mixture made as follows: Carbonate of copper, 5 oz.; ammonia (26°), 3 pints; water, 45 gallons.—W. F. GALE, in Amer. Agric.

PLANT PESTS IN THE WINDOW GARDEN.

GREEN aphis, black flies, white worms and neutral tinted slugs are an assured nuisance to the window gardener, whether considered individually or collectively. Just how to dispose of this artistic quartette is often a problem outside of greenhouses, for living rooms are not open to the wholesale treatment given elsewhere. For a light attack of verdant lice, hand-picking and frequent showering is often all that is necessary, especially if tar or tobacco soapsuds are used in the sprinkler.

But when the vermin lie thick on vein, crevice or fold, tobacco fumes alone are equal to the occasion; the smoke, however, must be confined, or it is of little use. I often group a number of afflicted plants on a table, closely covering the same with newspapers, cone fashion, leaving space at the bottom to introduce the smoke; a cigar or two may be thus comfortably utilized, or the tobacco may be burned on coals if due precaution is used. The paper should be left on 24 hours to prevent possible resuscitation of the narcotic victims.

The black flies and white worms are more closely related than appearance or habit would indicate. If the soil is badly infested it is well to repot the plant if it is small, but the larger growths will not bear having their roots shaken free. A teaspoonful of saltpetre in a quart of water used at intervals of a few days speedily lessens and eventually quiets the pests and serves as a fertilizer as well. Hand-picking is first in order for the slugs, which never in life or death relax their hold. I found a maidenhair fern thus infested, and after clearing the stipes I showered freely with whale oil suds, and have not since been troubled. —G. T. WOOLSON, Vermont, in American Agriculturist.

THE WINDOW GARDEN.

The window garden is a busy place from now on until plants can be put in the cold frame or their permanent places in the garden. To start seedlings, flats or boxes of convenient size are generally used. These are about three inches deep, filled to within half an inch with soil that has been sifted and is half sand. Firm this down well, scatter the seeds thinly, press them into the soil, then scatter a little fine, sandy soil over them, just to cover the seeds, and water with a fine spray. These may be placed in any convenient warm place until a little green begins to appear, when they should be removed to a strong light, but not into the sunshine until they have strength enough to stand without wilting. As soon as the fourth leaf appears, the seedlings should be transplanted into larger boxes, kept shaded a day, then kept in the full sun unless it is very hot. Keep them as close to the glass as possible, to avoid their being drawn. We have used seed pans, as florists call them, and also six or eight-inch flower pots, with good success. We like them better than boxes, especially for fine seeds, for if kept standing in saucers of water, the seed will germinate better than when water comes entirely from the top.—American Agriculturist.

Our Affiliated Societis.

THE ANNUAL MEETINGS.

On the 12th ult., the Horticultural Societies held their Annual Meetings for the election of officers as required by law, and we are pleased to note the excellent success attending their work in 1897, and the sound financial condition in which they enter the year 1898. This is in contrast to the showing of many of the old style societies whose many premiums were carried off by a few, leaving the rest of the members without benefit, and the treasury in debt. We will publish full reports of each in the annual report now going through the press, if received promptly, and in the journal simply give names of president and secretary for the new year.

WOODSTOCK.—This society is a live organzation, which unlike the flowers and other horticultural departments they discuss, flourishes alike in winter and summer. The report submitted by the Secretary, James S. Scarff, at the Annual Meeting held recently, showed a balance in hand of $71.70. The meeting was fairly well attended notwithstanding the disagreeable nature of the evening. The President for 1898 is Mr. D. W. Karn, and Secretary-Treasurer, Mr. J. S. Scarff. A letter was received from Mr. L. Woolverton, Secretary of the Provincial Society, regarding a lecture on horticultural topics, and the Secretary will ask that he be sent on March 15.

The satisfactory surplus on hand led to the suggestion that the plant distribution offered this year be the best that can be procured, with the view of holding out an attraction for new members. A committee was appointed to report on this at the next meeting. A comprehensive report of the meeting of the Ontario Fruit Growers' Association at Waterloo, was given by Mr. Scarff, and proved a very interesting feature of the evening.

HAMILTON.—At the meeting of the promoters of the Hamilton Horticultural Society on the 12th, Mr. A Alexander, was elected President, and on the 14th inst, Mr. J. M. Dickson was appointed Secretary.

ORANGEVILLE.—A very harmonious and enthusiastic meeting was held in the Council chamber last evening for the organization, when Mr. John McLaren was elected President and Wm. Judge, Secretary-Treasurer. Mr Judge writes, "The members are very much pleased with the HORTICULTURIST, and are all speaking in loud praise of the January number."

MEAFORD.—Mr. O. Boden, President; A McK Cameron, Secretary-Treasurer.

OWEN SOUND—On Wednesday, the 12th ult., there was formed here a Horticultural Society, in accordance with the Act. We have over fifty members, and purpose to affiliate with the Ontario Society. J. H. Packham, Secretary.

SARNIA.—The first meeting of the newly organized Horticultural Society was held on Wednesday evening, Jan. 12th, in the Police Court room, Town Hall. The officers were then appointed for the present year; and Hon. A. Vidal was made President, and T. J Gordon, Secretary.

HAGERSVILLE.—At the annual meeting Mr. Wm. Harrison was elected President, and S. W. Howard, Secretary-Treasurer.

OAKVILLE.—The first Annual meeting of the above Society was held on Wednesday, Jan. 12th. The society starts with 95 members, and there were over 70 present at the annual meeting Mr. Geo. A. Jacobs was elected President, and Mr. W. W. Paterson, Secretary-Treasurer. It was decided to meet monthly, on the first Saturday of every month.

THE DURHAM SOCIETY has done well for its members in 1897, considering that it has only been in existence one year. Here is a paragraph from the Director's report:—

The members obtained, during the past year, through the Society: 16 flowering shrubs, 60 pear trees, 62 papers garden seeds, 111 tubers, 433 house plants, 472 small fruit bushes, 491 papers flower seeds, 504 lbs. field seeds, and 4,319 bulbs of various kinds. A grand total of 6 468 articles. The O. F. G. Association gave 132 of these as premiums of membership, members purchased 1,334, and the Society presented to its members the remaining 4,902.

The Secretary is Mr. Wm. Gorsline.

PARIS HORTICULTURAL SOCIETY.—During the past the meetings of your Directors have been well attended, in no case have they had to adjourn for want of a quorum

The series of lectures arranged for did not result as it was hoped they would, so far as attendance was concerned. The lectures themselves, delivered as they were by some of the most talented men in that line, in Ontario, were excellent, being interesting and

FIG. 1293.—NATURAL STONE SEAT ON THE LAWN OF MR C. H. ROBERTS, PARIS.

instructive. The exhibit of apples at Prof. Panton's lecture, at so late a season, was remarkable. Twelve entries being made, of fruit, in nearly every instance in prime condition. Remarks were made by some, that the exhibits in some cases, were not, very possibly, all grown by the exhibitor. I replied to this when asked, "The object we had in view was not competition between individual orchards so much, as a desire to ascertain what fruit of the apple family could be kept through till that time of year with the ordinary means of storage. Favorable comment was received from the Ottawa Experimental Farm as to the value of this exhibit.

The flower beds laid out by the society in the front of the High School, and filled with perennials, almost filling all the space the first year, and quite sufficient when they have had a year or two of growth, have been a source of pleasure to both teacher and scholar as well as adding to the beauty of the grounds and an object lesson to the passer by.

A bed, 16 feet in diameter, was laid out in King's Ward Park, by the Town Council, and filled by the Society with foliage plants and cannas. Owing to lateness and coldness of the spring weather, we were not as well pleased with the result as might be for a time, but when seasonable weather came nothing but words of praise were heard by your Directors.

The Cemetery flower beds was again this year a matter of general congratulation : from remarks and enquiries the writer has heard made, the result to the general public has been educative, and a source of both pleasure and profit.

This year your Directors have been generous enough with the North Brant Agricultural Society to assume the whole of the exhibit of flowers, hoping in some measure to add to the efficiency of this part of the exhibit. The display this year being larger, better, and more conveniently arranged for inspection, the desire of the Directors of your Society has been largely gratified.

The committees appointed to select premiums for the ensuing year have named gladioli, Queen Charlotte cannas, aster seed and sweet peas. The intention is that each of the members shall have some of each of these. I may be allowed to remark perhaps, that a competitive exhibit of the result of the culture of these during the season would be of some interest.

An offer was made the teachers of the High and Public School that prizes, of the value of $3, $2, and $1 would be given by your Society for the best essay on some subject relating to horticulture. The reply received by your Secretary was that owing to the schools having been closed for a time through an epidemic of measles they regretted having to decline the proposal, as the time necessary for preparing for the examinations would not be sufficient.

The flower bed in King's Ward Park has been filled with the bulbs from the cemetery for spring flowering and tulips only in assorted sections substituted in the cemetery. Our display of spring flowering bulbs in this place, held so sacred by many of us, has encouraged the Cemetery Committee of the Town Council to fill two other beds with crocus snowdrops and tulips, and possibly next season they will not object to assume the whole display and thus relieve us of this source of expenditure, and in this way give us an opportunity of expending our money in other directions.

Your Secretary was invited to attend a meeting of the Directors of the North Brant Agricultural Society, and when asked to address them stated the desire of the Paris Horticultural Society was to work harmoniously with them, believing there was work to be done by a separate institution of this kind not in their line exactly and yet recognized by the Agricultural and Arts Act. An attentive hearing was given and many questions asked: the assurance being given that their desire was to work together courteously and harmoniously.

All of which is respectfully submitted,

C. H. ROBERTS,
Secretary.

Paris, January 12th, 1898.

A FRUIT PACKING HOUSE.

NOW that we are likely to open up an important export trade in Canadian fruit, a suitable packing house is an important consideration. Mr. Theoron Woolverton, who is near Riverside, California, harvesting his crop of oranges there, writes:—"I have been unable to get the proper plans of an orange packing house, but there are no special features beyond those of room and light. I enclose you a rough sketch of ground plan.

Packing house floor on a level with cars and about level with wagon platforms, length of packing house 160 ft., width 80 ft., grader about the centre of the house, windows numerous and several large skylights in the roof. The rear compartment is for boxes and box material with two windows or rather doors for loading on to the wagons. The covered platform extends the entire length of the packing house on the railroad side and entire width on the receiving side, large scales just inside the receiving door.

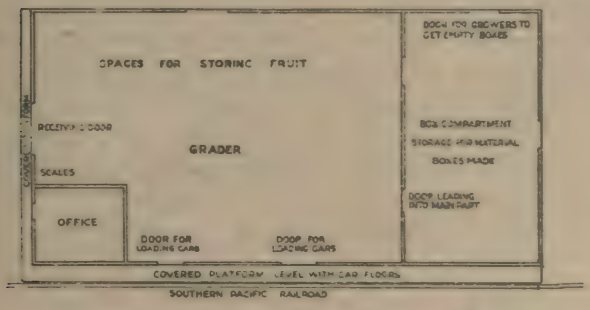


FIG. 1294.—PLAN OF FRUIT PACKING HOUSE.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter or Post-Office Order are at our risk. Receipts will be acknowledged upon the Address Label.

ADVERTISING RATES quoted on application. Circulation, 5,000 copies per month.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

Notes and Comments.

SAN JOSE SCALE.—We are publishing the full text of Mr. Dryden's San Jose Scale Act. It makes it illegal for any one to import or plant infested trees, and takes power to inspect all orchards and destroy all such trees wherever found, allowing the owner a quarter of their value as assigned by the inspector. It is estimated that about 3000 trees in our Province are affected, and must be immediately destroyed, in order to stamp out the pest. This will be the work of the Province. Then it will rest with the Dominion to pass an Act that will prevent the introduction of any more infested fruit or fruit trees from the United States, for unless the action of the Local House in stamping it out, is sustained by the Dominion in keeping it out, all our efforts will be vain.

Whole groves of forest trees have been destroyed in some sections of the United States we have been informed, as the only sure method of checking the spread of the San Jose Scale. A parasite is said to have been found in California preying upon the scale internally; it is known as *aphelinus fuscipennis*, a formidable enough name to frighten any insect. It is said that in California this parasite increases so fast that it holds the pest in check. Whether it would do the same for us in Ontario is yet to be proved.

A NEW COLD STORAGE SCHEME—We are much encouraged with the prospects of improved accommodations next summer, for the export of our valuable fruit products. The great American Cold Storage firm of Perkins & Weber, Chicago, propose to build a great central cold storage depot worth about

$200,000, perhaps at Montreal, whence fruit would be loaded for Great Britain. Branch depots are to be provided through the country, and special refrigerator cars. Should this plan be fully carried out, it will much facilitate our export trade.

A SWINDLE.—Mr. A. W. Milne, of Ottawa, writes that in 1892 he purchased from a New York State Nurseryman, six Kings, four Wallbridge, two Yellow Transparents, and two Golden Russetts. The Kings proved to be worthless crabs, the Transparent and Wallbridge miserable little seedlings, samples of which he sends in a tin box, Jan. 14th!

He writes, "It is not the value of the trees I care about, but the loss of time, ground and labor; and I certainly think a continuance of such methods should be stopped if possible."

Our readers should always be careful to place their orders with reliable nurserymen, who have a reputation to sustain. Swindlers abound in every business, and in nursery stock there is a special opportunity, because the cheat cannot be proved for years, and then it is difficult to obtain redress.

THE COUNTESS OF WACHTMEISTER condemns meat diet for either animals or plants. In an interview recently she stated that she was sure the curculio, and codlin moth in the fruit was a result of feeding the trees with animal fertilizers! Surely vegetarianism has gone mad.

IT PAYS TO SPRAY.—This statement is well proved by the report published in a recent special bulletin from the Department of Agriculture, giving the results of the work done in twenty-nine orchards in various parts of the province. At the close of the season written reports were asked for from the persons whose orchards were treated, and these reports are so conclusive concerning the results that we extract two or three for our readers benefit.

Mr. E. E. Luton, St. Thomas: "In reply to yours of the 3rd, I may say that I consider spraying a most decided success financially. The spraying in my orchard, as conducted by W. M. Orr, superintendent of the experimental spraying, was very instructive, and in some cases very great interest was taken by those in the neighborhood that had orchards to spray. The applications were to have been seven times, but owing to the trees being in blossom only six were made, beginning on April the 20th, and finishing on July 8th. Although the first part of the season was wet and unfavorable the results were good. The varieties sprayed were: Ben Davis, Spy, Greening, Tallman Sweet, Fall Pippin, Seek, Blenheim, Russet, and pears. The result on pears was not satisfactory, but on apples was a most decided success, but was more noticeable on Greenings and Spys. Out of the orchard, which only has 93 trees, and 11 of them sweet, I sold 60 bbls. and reserved 10 for my own use, and yet have about 25 bbls. of second-class, or culls. My apples, for quality, were unsurpassed in this section, taking 6 firsts and five second prizes out of 13 entries at the Fall Fair. I received $2.50 per bbl., which was 15 cents above any others in this section—the majority selling at from $1 50 to $1.85 per bbl.

"In regard to profit per tree, may say that I cannot at present give definite information, but think I am quite safe in stating fully twice as much money was obtained from the sprayed trees as from the unsprayed. On the latter the apples were scabby and about the size of walnuts, while the foliage turned brown and fell off fully five weeks in advance of sprayed, and this year's spraying may have a very great benefit on next year's produce.

"Apples in this section were such a poor crop that people in passing the orchard were quite often heard to say that spraying must pay, as the sprayed orchard was the only one with any apples in that they had seen in all their day's drive. Many walked through the orchard and compared the sprayed with the unsprayed."

Mr. Norman McPherson, Kincardine: "The spraying of the apples was of great benefit, so much so that I intend to continue it myself. The fruit is larger and better formed and the Snow apples are almost free from spots. Had the weather been better the results might have been still more satisfactory. As to the trees sprayed, I could perhaps illustrate the cash benefit to me. The Snow apple trees that were sprayed have realized in fruit this year $4.00 each; those not sprayed—nothing—as the fruit was hardly worth picking. All the other varieties sprayed were greatly improved, but not to the same

extent as the Snow apples. The Northern Spys, for instance, were fully fifty per cent. better through the spraying. A large number of fruit growers in this section are now in favor of spraying, and the visit of the officers sent out by the Department has been the means of conferring a great benefit upon all owners of orchards."

Those wishing further details should write C. C. James, Department of Agriculture, Toronto, for a copy.

CANADIAN PEARS.—On page 463 of last volume, Beurre d'Anjou were quoted at 15/ for 54 pears in Glasgow. It should read, "for fifty-four pounds of pears."

THE QUEBEC FRUIT GROWING SOCIETY has appointed a committee on fruit experiment stations. It is thought that four stations might cover the Province.

THE CONRATH RASPBERRY seems to be a vigorous grower. Mr. A. C. Papineau, of Montreal, writes :—"The Conrath bushes sent me last spring have done very well. One has grown to the height of six and the other to eight feet, and has given two bunches of good fruit."

COLORADO BACK GARDEN. — Our friend Mr. Groff writes to call attention that this garden is decorated with his gladioli, and that the spike Dr. Gates is holding in his hand is one of the now noted Groff hybrids, and Dr. Gates is corresponding for a large increase in his favorite flower, for 1898. "Canada still leads."

THE NIAGARA FRUIT GROWERS have appointed Mr. William Black of St. Catharines, a delegate to Ottawa, along with our Committee, *re* a Dominion Act restraining the importation of plants from those states where San José Scale is known to exist. The Ontario fruit growers have sent four delegates, viz., W. E. Wellington, A. H. Pettit, M. Burrell, and E. D. Smith.

TOMAPOTATO.—A reader has sent us a clipping concerning a so called great discovery that the tomato vine may be grafted on the potato top, and thus we may thus grow a crop of potatoes and one of tomatoes on the same ground, at the same time. The writer thinks that in France, where ground is scarce, the discovery may be of great utility. We doubt it very much, for the labor of grafting would be very expensive.

A COMMITTEE *re* SAN JOSE SCALE interviewed the Minister of Agriculture, on Tuesday the 25th. In response to their demands for prohibition of the importation of affected nursery stock, the Minister said that the United States had prohibited the export of such trees. However he would consult with his colleagues and do everything in his power to protect the interests of the fruit grower.

SPRAY FOR SAN JOSE SCALE.—At our Waterloo meeting Prof. Fletcher said, "All the best experiments have shown that the best treatment is to spray the trees in the autumn with kerosene emulsion—the mixture of two gallons of coal oil with one gallon of soap suds, churning them together till the mixture is of a creamy nature, which takes five minutes, and then mix that with from four to six times its quantity of water. This should be sprayed over the trees as soon as the leaves fall. Then in the spring before the new growth begins those same trees are to be sprayed with whale oil soap, of the strength of two pounds in one gallon of water.

Question Drawer.

Treatment of Azalea.

972. SIR,—Could you give us a good article on growing the Azalea indica, say in the January number. We have distributed 110 this season. If you will reply you will oblige the Lindsay Horticultural Society.

F. J. FRAMPTON, *Secretary.*

We cannot do better in reply than to quote from Nicholson's Dictionary of Gardening:

"Thorough drainage is essential, and a compost of half peat, the other half made up of fibrous loam, leaf soil and sand, in equal quantities. They cannot have too much light and air, and may be grown to almost any size by shifting from one pot to a size larger.

"In re-potting, the whole of the crocks should be taken away from the base of the ball of soil roots, and the top should also be removed till the fine roots are reached. The plant should then be placed in the new pot, and the additional soil rammed firm, in order to prevent the water running through it, and thus depriving the plant from any benefit therefrom. In all cases the roots near the stem must be above the soil, so that the water may not sink in next the stem, or death will most certainly ensue. After potting for a few days, the plants should be kept close and freely syringed, as the growth is completed, they may be well hardened off. The best time for potting is after flowering, before the new growth has been made. From October to June the plants should be in the house, and during the other months in a cold frame, or plunged in pots in the open; or what is preferable in favored localities, planted out in prepared beds; they will thus be kept cleaner, and the growth will be much superior. In autumn they may be lifted and repotted, placing in a shady position for a few days. Water in abundance must be given throughout the blooming season; and the plants must, on no account, be allowed to become dry. At the same time a proper amount of care is most essential, as an excessive amount of moisture is equally as fatal as drought."

Earth Worms.

973. SIR,—A part of my lawn is being taken possession of by a sort of grub commonly spoken of as fish worm. In the dry months of summer it is a toil instead of a pleasure to mow the grass, owing to the countless small elevations. As the lawn is yet uncovered, kindly suggest a remedy for early application in order to stamp out the invasion.

CHAS. T. NOECKER, M.D.,
Waterloo, Ont.

Grapes for British Columbia.

974. SIR —I have a small garden around my house. What is the best kind of grape to plant? Grapes are not a success here because we do not have sufficient sun to ripen them.

E. DENTON, *Vancouver.*

We would advise trying Campbell Early, Early Victor, Lindley, Moore's Early and Concord.

Sacred Lily.

975. SIR,—Would you tell me what to do with the Sacred Lily? Mine has just finished blooming. Is the bulb any use the second year?

JANE S. LANDER, *Port Hope.*

Reply by Webster Bros., Hamilton.

We think your correspondent will find the bulbs of the Sacred lily of no further use. Our climate here does not seem capable of bringing these bulbs to perfection, when planted out there seems to be no increase or improvement in the size of the bulb. We should be pleased to hear if other parts of the country are capable of growing the Chinese Sacred Lily.

Growing Roses in the House.

976. SIR,—Please give me some information regarding the culture of roses in the house. I have three thrifty plants (one the Marechal Niel). I have had them since early spring, and have no blooms yet, though they grow steadily, and are over a year old. I have been using a liquid fertilizer, made by pouring boiling water on well rotted cow manure. They are free from insects, and I can see no reason for their not blooming.

B. K., *Trenton.*

Reply by Webster Bros, Hamilton.

Your correspondent has, we judge,

some varieties of roses that are not very well suited for winter blooming. Marechal Niel, which she mentions as one of the varieties, flowers well in a conservatory when it has attained a good size, but for house culture it would not be among our first choice. The highest class of roses for winter flowering are, Perle des Jardins, Bride, Bridesmaid, Kaiserin Victoria, Sunset, etc., commonly known as florists roses. Some of these when given ordinary house culture give much fewer bloom and of inferior quality to those produced in greenhouses. Some Tea roses, though splendid garden decoration, refuse absolutely to be forced. The following varieties thrive almost anywhere that the geranium will, the flowers are not of the best quality, Snow Flake, Hermosa, Agrippina, Roi de Cramoise, Clothilde Souperb, Champion of the World. Try the plants in a little more sun, if possible, and higher temperature, to induce freer growth.

No Scale in Canadian Nurseries.

977. SIR,—I set out one hundred peach trees last spring, and I think of putting out the same number next spring. I was told by a fruit tree agent not to buy from the ——— Nursery, as they had the San José Scale there. Would you kindly inform me whether this is correct or not? It is reported that the San José Scale is in some of the orchards in this vicinity. I got a half dozen peach trees a year ago from a nursery near Toronto. A lot of the leaves curled up and fell off, but of the lot I set out last spring I did not notice anything of it amongst them. I do not know what nursery they came from, but the trees seem healthy and doing well. I was pleased to see such good reports of your annual meeting. I was sorry that I could not be present, in future I hope to be able to take advantage of these meetings.

T. B. MILLAR *Kincardine.*

Agents will resort to all kinds of schemes in making sales, and this is a sample. No San José Scale has yet been found in any Canadian nursery, and we hope it never will. Our correspondent may therefore purchase with perfect confidence from any of them.

⁂ Open Letters. ⁂

New Fruit Crate.

SIR,—I have patented a fruit crate that I think will answer the purpose of shipping fruit better than a basket or barrel; the crate will be in proportion to hold a bushel, divided into two halves. Three of them will take up less room than a barrel and will be lighter; it will do to ship any kind of fruit, viz.:—apples, cherries, plums, oranges, tomatoes, peaches, pears, or any other kind of fruit. I claim the fruit will keep better and that I can ship one-tenth more fruit in the same room with my crate than with the barrel or basket. The crate will be strong, durable and cheap; the stuff to make the crate can be cut at any mill at the rate of about three cents per crate; it can be shipped in pieces of about 10,000 in a car, and can be put together by the fruit shipper. A boy can put 100 crates together in a day. There will be no risk of jammed or damaged fruit, and the crate will be b tter for the market, for the public can see what they are buying. If my crate should be worth consideration, please let me know.

WM. STAPLEY,
Lot 8, Con. 10, Bardsville, Ont.

The San Jose Scale.

SIR,—It is of great importance that the truth should be known as soon as possible with regard to the actual extent to which our Canadian orchards have become infested with the San José scale. There are at least two other kinds of scale insects which resemble the San José scale so closely that it requires some experience to distinguish them from it. The exact identification of these is of importance, because these two scales, the "Putnam" and the "Forbes," are very much less injurious than the true San José scale. I shall be pleased to examine and report direct, as well as through the CANADIAN HORTICULTURIST, upon any specimens which your readers may send me for that purpose. All specimens and accompanying letters may be sent to me FREE OF POSTAGE, if addressed "The Entomologist," Central Experimental Farm, Ottawa.

All packets should bear the name of the sender.

J. FLETCHER.

Japan Plums in Quebec.

SIR,—Two years ago last spring I planted in Valois, near Montreal, one plum tree (Burbank) and one (Abundance), which I had obtained from Rochester, N.Y. Burbank did well the first season, but started only weak shoots the next spring. Abundance was doing very well all the summer of 1896, and started a fair crop of leaves in May, 1897, which soon faded. I pulled out the tree and noticed that the roots had been winter-killed. I am inclined to think that if grafted on our native red plum roots, they might stand our severe winters.

A. C. P., *Montreal.*

A Good Season.

SIR,—We have had one of the best fruit seasons ever experienced in British Columbia, and apples, which have not done espec ally well in the lower country before, have this, season yielded excellent crops and are retailing at from 65c. to $1.50 per forty lb. box. Early plums sold from 4c. to 6½c. per lb. wholesale. 2nd early 2½c. to 3½c., late and small varieties like Green gage and Lombard, from 1c. to 2c. per lb.

M. J. HENRY,

Vancouver, B.C.

Reports of Plants Distributed.

SIR.—I have fruited the Green Mountain grape twice. It has proved hardy, ripens early, good flavor and very prolific.

T. GOBLE,

Near Port Sandfield, Muskoka.

LONDON MARKET FRUIT AND VEGETABLE MEASURES.

NOW that we are beginning to place our Canadian fruits on the British market it is interresting to know something about the packages and measures used in that country. We can thus better understand the market reports which we receive giving prices of fruits in England :

These measures being made either of wickerwork or deal shavings, vary triflingly in size more than measures made of less flexible materials.

Seakale Punnets —Eight inches diameter at the top, and seven and-a-half inches at the bottom, and two inches deep.

Radish Punnets.—Eight inches diameter, and one inch deep, if to hold six hands ; or nine inches by one inch for twelve hands.

Mushroom Punnets —Seven inches by one inch.

Salading Punnets.—Five inches by two inches

Half Sieve. —Contains three and-a-half imperial gallons. It averages twelve and-a-half inches in diameter, and six inches in depth

Sieve —Contains seven imperial gallons. Diameter fifteen inches, depth eight inches. A sieve of Currants twenty quarts.

Bushel Sieve —Ten and-a-half imperial gallons. Diameter at top seventeen inches and three quarters, at bottom seventeen inches ; depth eleven inches and a quarter.

Bushel Basket.—Ought, when heaped, to contain an imperial bushel. Diameter at bottom ten inches, at top fourteen inches and-a-half ; depth seventeen inches. Walnuts, Nuts, Apples, and Potatoes are sold by measure. A bushel of the last-named, cleansed weighs 56 lbs., but 4 lbs. additional are allowed if they are not washed. A junk contains two-thirds of a bushel.

Pottle.—Is a long tapering basket that holds rather over a pint and-a-half. A pottle of Strawberries should never hold more than one quart ; a pottle of Mushrooms should weigh one pound.

Hand.—Applies to a bunch of Radishes, which contains from 12 or 30 or more, according to the season.

Bundle.—Contains 6 to 20 heads of Broccoli, Celery, &c. ; Seakale 12 to 18 heads ; Rhubard, 20 to 30 stems, according to size ; and of Asparagus from 100 to 125.

Bunch.—Is applied to herbs, &c., and varies much in size according to the season. A bunch of Turnips is 12 to 25 ; of Carrots 15 to 40 ; of greens as many as can be tied together by the roots.

Grapes are put up in 2 lbs. and 4 lbs. punnets ; new Potatoes, by the London growers, in 2 lbs. punnets. Apples and Pears are put up in bushels, sieves, or half sieves. A hundred weight of Kentish Filberts is 100 lbs. Weights are always 16 ozs. to the pound.

LITTLE NUT PEOPLE.

OLD Mistress Chestnut once lived in a burr,
Padded and lined with the softest of fur.
Jack Frost split it wide with his keen silver knife,
And tumbled her out at the risk of her life.

Here is Don Almond, a grandee from Spain;
Some raisins from Malaga came in his train.
He has a twin brother a shade or too leaner,
When both come together, we shout "Phil-opena!"

Little Miss Peanut, from North Carolina,
She's not 'ristocratic, but no nut is finer:
Sometimes she is roasted and burnt to a cinder,
In Georgia they call her Miss Goober or Pindar.

Little Miss Hazelnut, in her best bonnet,
Is lovely enough to be put in sonnet,
And young Mr. Filbert has journeyed from Kent,
To ask her to marry him soon after Lent.
This is old Hickory, look at him well,
A General was named for him, so I've heard tell.
Take care how you hit him. He sometimes hits back!
This stolid old nut is a hard nut to crack.

Old Mr. Butternut, just from Brazil,
Is rugged and rough as the side of a hill;
But like many a countenance quite as ill-favored,
He covers a kernel deliciously flavored.
Here is a Southerner, graceful and slim,
In flavor no nut is quite equal to him
Ha, Monsieur Pecan, you know what it means
To be served with black coffee in French New Orleans.

Dear little Chinquapin, modest and neat,
Isn't she cunning and isn't she sweet?
Her skin is as smooth as a little boy's chin,
And the squirrels all chatter of Miss Chinquapin.

This is Sir Walnut; he's English you know,
A friend of My Lady and Lord So-and-So.
And now my dear children, I'm sure I have told
All the queer rhymes that a nutshell can hold.

--Pearl Rivers, in Christian Observer.

Our Book Table.

JOURNALS.

FIRST LESSONS IN THE SCIENTIFIC PRINCIPLES OF AGRICULTURE FOR SCHOOLS AND PRIVATE INSTRUCTION, by Sir Wm. Dawson, C.M.G., LL.D., F.R.S., late principal of McGill University. Published by W. Drysdale & Co., 232 James St, Montreal. Price, 75 cents.

For those who wish to thoroughly understand the principles of agriculture, and like them put in a clear and concise manner, this work is admirably adapted.

ANNUAL REPORT of the Bureau of Industries for Province of Ontario, 1896.

Journal of App'ied Microscopy (monthly), Volume 1, No. 1, of a very useful journal for students of the microscope. Bausch & Lamb Optical Co., Rochester, N. Y.

FIFTH REPORT of the Dept. of Agriculture of the Province of B. C., 1895-6.

OFFICIAL HAND BOOK OF THE DOMINION OF CANADA, published by the authority of the Minister of the Interior, August, 1897, 115 pages, beautifully illustrated.

ANNUAL REPORT of the Pomological and Fruit Growing Society of the Province of Quebec, 1896, Secretary, W. W. Dunlop, Ontremont, P. Q.

CATALOGUES.

H. H. Groff, Simcoe. Cannas, Gladioli and Clivias. *The Steele Briggs Seed Co., Limited*, complete catalogue of famous seeds, plants, bulbs, etc., Toronto, 1898. *A. M. Smith's* complete catalogue of fruit trees, plants and vines, 1898, St. Catharines, Ont. *James J. H. Gregory & Sons*, Marblehead, Mass., catalogue of home grown seeds, 1898, free to all. *Rennie Seeds*, 1898, Wm. Rennie, Toronto.

Hersee's Catalogue of Fruit and Ornamental Trees, Roses and Shrubs. Edwin Hersee, Woodstock. *Hull's Annual Catalogue* Fruit and Ornamental Trees, Roses, Shrubs, etc., grown and for sale by A. S. Hull & Son, St. Catharines. *J. A. Bruce's Catalogue* of Seeds for 1898, Hamilton, Canada.

DR. SLAVEN'S GARDEN, ORILLIA.

THE
CANADIAN HORTICULTURIST.

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THE ORCHARDS AND GARDENS OF ORILLIA.

THIRTY years ago, the district of country now known as East Simcoe was a *terra incognita* to most of the rest of the world. Lumbermen were aware that there was still there a good deal of first-class pine, white oak, and other valuable timber; but it was generally supposed that the land was little fitted for agricultural, and not at all for horticultural purposes; therefore when, a few years ago, the Fruit Growers' Association annual meeting was held in the town of Orillia, a most agreeable surprise was awaiting the officers and visiting members, in the magnificent display of apples and other fruits which had been provided for the occasion by the local Horticultural Society, a display which had never before, nor has been since equalled at any winter meeting of the Association. There are now but few farmers in East Simcoe without their orchard of apple trees, varying in size from a half to five acres in extent, whilst in the vicinity of Orillia the apple crop has grown to be one of commercial importance, and is yearly increasing in quantity and quality. All but the most tender varieties of apples are successfully grown, the hardier fall sorts, such as Duchess, always yielding heavy crops of most excellent fruit; the Wealthy is also proving a valuable variety, being hardy and productive; American Golden Russet, Snow and Pewaukee are also hardy and do well.

Of course, all the early apples, such such as Red Astrachan, Yellow Transparent, etc., are suitable and give good returns.

A first-class hardy winter apple, to follow the Wealthy, would be a great boon. In some localities the Spy succeeds well, in others the Wagener (a grand dessert apple), King of Tompkins, etc. But none of them can be entirely relied upon. The Wolf River, lately introduced, has fruited pretty well during 1897, is a very handsome and fine apple, but belongs to a class already well filled—fall or early winter.

All the small fruits grow to perfection,

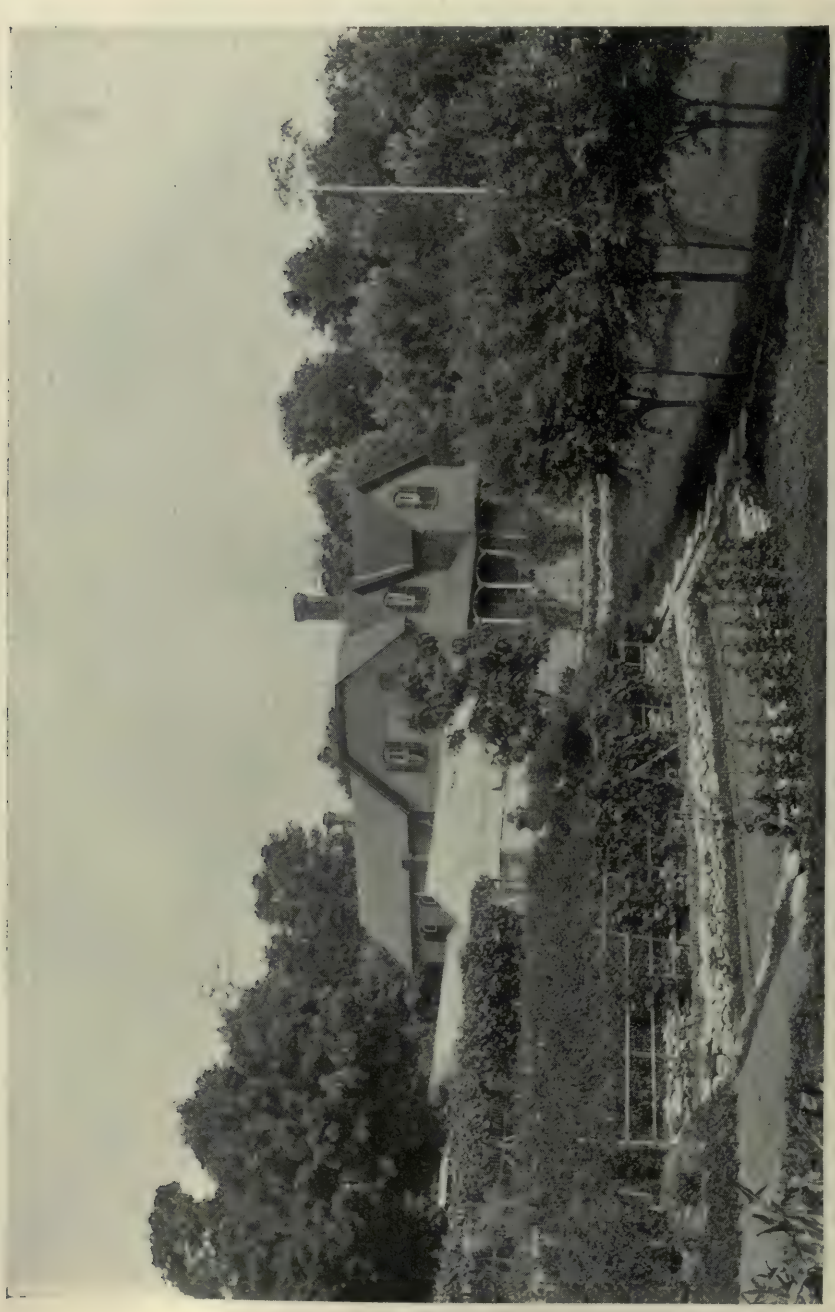


FIG.—1294.—"SOUTHWOOD HALL," HOME OF MR. HENRY PELLATT.

FIG. 1295.—HOME OF W. J. FORBES, ORILLIA.

and are largely cultivated for local and outside markets; they are shipped chiefly to the north.

Fifteen years ago Orillia depended chiefly on the Oakville and Niagara districts for small fruits; gooseberries were almost quite unknown, whilst now, the market is often glutted with the local product of strawberries, raspberries, currants, gooseberries, etc., equal in quality to any which can be produced elsewhere.

Orillia is one of the most delightfully situated towns in Ontario, bordered by two beautiful lakes—Simcoe and Couchiching—the latter interspersed with numerous islands, and being easy of access, affords unexcelled facilities for boating and fishing; a public park on the lake shore, and right in the town, prettily wooded and laid out with walks, drives, tennis courts, etc., make the town additionally attractive.

Flourishing yacht and canoe clubs afford additional facilities for enjoyment on the water; both clubs hold regattas during the summer.

Orillia offers many natural attractions as a place of summer resort, and many Toronto gentlemen have delightful residences there, where with their families they enjoy the summer, and hospitably entertain their many friends not so fortunately placed. Mention may be made of Mr. Henry Pellatt, of "Southwood Hall," Mr. Edin Heward, of "Edinswold," Mr. A. A. Allan, of "Strathallan," The Messrs. Kilgour, etc.

Amongst the principal apple growers may be mentioned Messrs. R. A. Dewart, J. W. Wainman, Joseph Dunn, J. Ryerson, T. A. Millichamp, C. S. Harvey, W. Fisher, and there are many others, on a smaller scale, living in the town: Messrs. J. H. Tool, A. Fowlie, G. J. Bolster, C. L. Stephens; all these

FIG. 1296.—"STRATHALLAN," ORILLIA, OWNED BY MR. A. A. ALLAN.

gentlemen are members of the Orillia Horticultural Society, which was organized eleven years ago, and which, by holding exhibitions, offering many and liberal prizes and other means, has done much to foster and promote fruit growing in the district. Mr. C. L. Stephens has been Secretary of the Horticultural Society since its formation ; he lives in a delightful place on the lake (Couchiching) shore, to which a flying visit was made by many of our members on the occasion of the meeting.

FIG. 1297.—"THE HERMITAGE," HOME OF MR. C. L. STEPHENS, THE SECRETARY.

PRUNING GRAPE VINES.

THE trouble with an unpruned vine is that it bears too much fruit, and this means poor quality. Let us take a thrifty Concord vine to illustrate this matter. At the end of the season such a vine, in good soil, kept well tilled, should have somewhere near to 300 fruit buds on the new growth of the past season. Now, a good Concord vine should bear about twenty pounds of first-class fruit each season ; if it does this steadily year after year no more should be expected. To bear that amount of fruit, not more than fifty buds are required. But as we have seen our vine has about six times that number, hence many in excess of the need. Leave the vine untrimmed and the 300 buds will overbear and the yield will be very inferior. Prune to reduce the number of buds to fifty and a good crop of fruit may be expected. That is the simple proposition needed for guiding your pruning knife. Cut away, therefore, enough of the young canes to bring the buds down to the right number. A good rule with Concords is to remove all the canes but five, and cut these back to nine or ten buds each. The Delaware class should have even less. Prune and tie up so as to have a good distribution over the trellis. The pruning should not be deferred beyond this month if it can be helped.

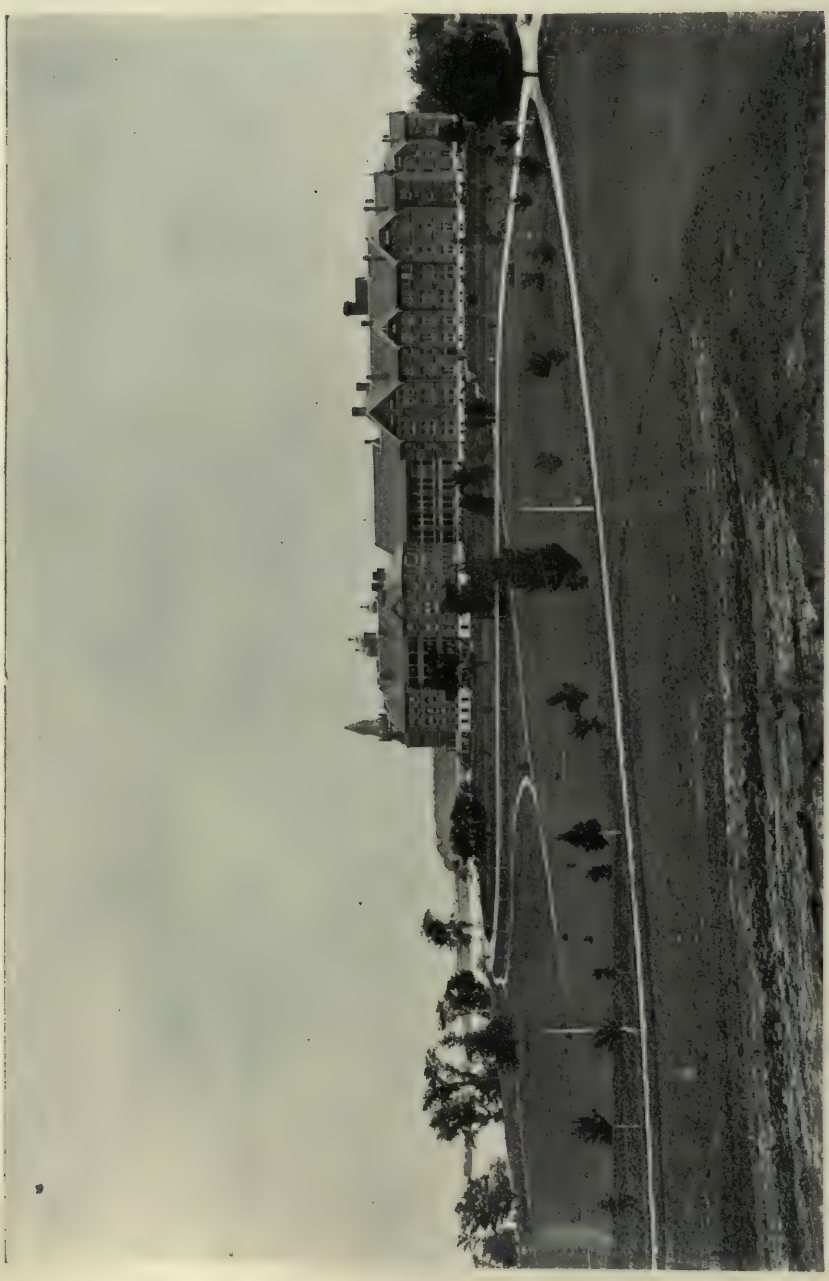


FIG. 1298.—PROVINCIAL ASYLUM FOR IDIOTS, ORILLIA SHOWING PARK.

TOMATOES FOR ENGLISH MARKET.

SIR, In reply to your favor of the 20th, inst., would say, That of all varieties of tomatoes that I am acquainted with I would recommend the Dwarf Champion and Dwarf Aristocrat as coming within the needed qualification required for your purpose.

Where the market demands a small tomato there is no variety with more good points to recommend them than the two named. First, the plants being of a very peculiar dwarfish habit, standing upright like sturdy little trees, make them very easy to grow in the greenhouse or hot-bed, and when ready for transplanting do not wilt like other slenderer varieties but commence growth at once and make strong upright bushes that usually need no trimming or tying up. Secondly, they can be planted closer together than the common varieties on account of their upright habit and holding their fruit up from the ground without the aid of stakes or racks; much expense is saved in their cultivation. Thirdly, they are of perfect shape and smoothness, and fourthly, they ripen quite early in the season being the earliest of all smooth varieties. There are a few varieties that may ripen a little earlier, but they will always have a large proportion of their food quite rough, whereas a rough fruit on either of these kinds is very rare. I also consider them much less liable to be afflicted with blights and diseases than other varieties.

The Dwarf Champion is of a dark red or purplish color, and the Dwarf Aristocrat is of a light red or scarlet color. In our western markets the demand is for a dark red colored fruit, but in some of the eastern markets the light red color is preferred. You will have to find out the color demanded by your market and choose accordingly. The color is the only difference between the two varieties. I understand that a yellow variety of the same class has lately been put upon the market, but I have not tested it as yet. As to the early Michigan, I have heard it well spoken of, but the only plants I have ever seen of it did not impress me very favorably with it, and so I would not consider it nearly as good a variety as the two mentioned.

For a home market, that like our American markets, likes a very solid large tomato, I know of none, which, taking all points into consideration, are equal to the two new ones, Rex and Gloria. The first, a dark red very large sized fruit; the latter, not quite as large a fruit, but yet large enough to be classed among the large ones, and of a light red color; both are very firm solid flesh and of superior flavor.

The copy of January number of CANADIAN HORTICULTURIST at hand, and well pleased with it; shall look forward with pleasant anticipation for its monthly visits.

It is our ambition to make our grounds occupy the same place as the original home of new vegetables, as those wonderful grounds of Luther Burbank's do as the home of new and wonderful fruits.

L. H. READ.

Grand Rapids, Wisconsin.

THE KIEFFER PEAR.

FIG. 1299.—KIEFFER PEAR.

SO much has been said and written, both for and against the Kieffer pear, that we hesitate to make any further statements until the question of real commercial value has been more definitely stated. That it is unequalled in productiveness, cannot be disputed. One tree two years planted, at Maplehurst, bore in 1896 two hundred pears, and a small orchard near by was, in 1897, literally breaking down with immense clusters.

It varies considerably with different soil and treatment, sometimes growing large and fine, with excellent color, and lacking both in size and appearance.

Gathered early and ripened indoors, one is surprised at the beautiful rich golden hue it takes on, which goes a long way to command a high price in any market. As a shipper it is unequalled, continues firm and hard in texture long after its appearance would indicate ripeness. Like the Ben Davis apple it is showy on the table, but must be eaten under the most favorable conditions to be enjoyed.

Some sample cases of this variety have already been forwarded to Great Britain, and brought about $3.00 per bushel case, and yet the salesman discouraged their shipment because he thought the pear could not be sold a second time to the same persons.

The variety originated with Peter Kieffer, near Philadelphia, and was a supposed cross between the Chinese Sand and the Anjou. It matures in October and November.

Meehan's Monthly takes rather a favorable view of this variety as a market pear, as is shown by the following extract :

The Kieffer pear, an accidental seedling found by an humble French gardener residing in Germantown years ago, has marked a new era in pear cul-

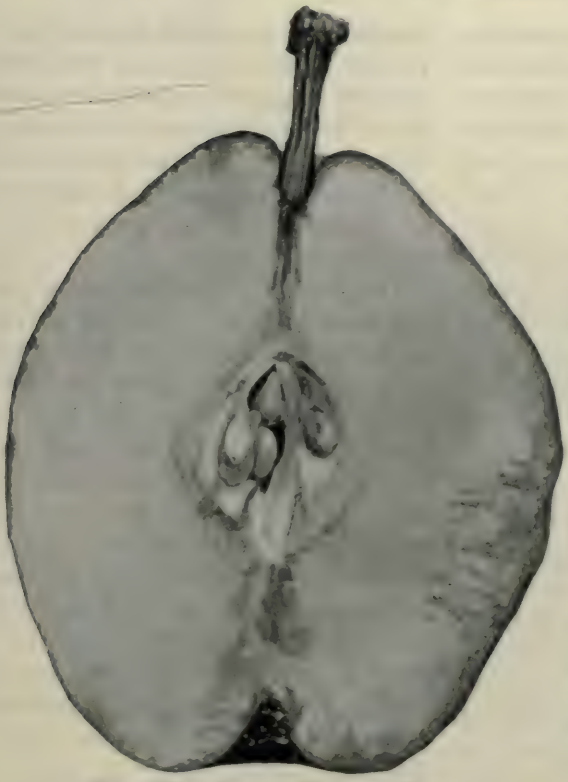


FIG. 1300.—SECTION KIEFFER PEAR.

ture. Although of poor quality in the hands of those who have little experience in the ripening of pears, it is of superior excellence when this knowledge exists; but its great advantage over other pears is that, like the apple, it may be stored and barrelled and got safely to market, so that pears are now on our fruit stands the greater part of the winter season. A few years ago, it was a rare sight to see a pear in winter, except on the table of the amateur grower, who carefully stored them away in cellars. It is getting a wide reputation all over the world. In Florida, they find it, with its allied variety Leconte, the most profitable of all pears. It has even safely been introduced into Southern Africa, where the pear growers are looking forward to their first experience with it the coming winter.

ASPARAGUS.—Likes a night temperature of 60 degrees. partial shade, air, and plenty of root room when established.

TOMATO CULTIVATION IN WEST MIDDLESEX.

EXPERIMENTS of three acres in cultivation. The hot beds were prepared about the middle of March with sashes six feet by four feet, with four loads of horse manure to each sash, leaving the manure eighteen inches on each side of the frame so as to keep out all frost. The seeds were sown in drills about six inches of rich loam, on April the 1st and transplanted at once into cold frames three inches apart each way, the manure on each side of the hot bed being cut off with a spade and dug in about six inches deep into the cold frame. The plants were removed to the field by cutting with a knife between the rows each way, and then using a spade to lift them into trays leaving a nice ball of earth to each plant, this was done about the tenth of June. Noticing the tomato blight on a few plants, whilst in the cold frame, I completely destroyed it by spraying with the Bordeaux mixture. The field being new ground and thoroughly worked up and marked, holes were dug with a hoe and a handful of chicken manure was placed in each hole to give the plants a

start. There was no rain for ten days after planting, but they did not show the slightest signs of wilting; cultivating both ways once a week was followed and a handful of ashes given to each plant, but progress was slow owing to cold weather till the middle of July.

The varieties planted were Maule's Earliest which were too rough but a wonderful cropper; the distance between each plant four and a half feet.

Ignotum a nice smooth tomato, but not prolific enough, distance between each plant was four and a half feet.

Livingstone's Favorite was fairly profitable, and planted five feet apart.

New Imperial were by far the largest and best croppers, and the vines should be planted seven feet apart; over a bushel each was picked off some plants. I also tried some of Carter's Duke of York, one of the best English varieties; they were too small for canning purposes, but would make good exporters to English markets as the smaller tomatoes are more in demand than the large. The plants were trimmed on the roadway with single stems or cordons and tied to stakes, the rest of the field was left to natural growth, except a half acre which was trimmed to a single stem and left them lying on the ground which produces earlier fruit.

The method adopted by saving the fruit from frost was by pulling up the vines and placing them in heaps, then at leisure shaking all the fruit off and collecting in large heaps near the cold frame, then culling out the ripest and putting them under the glass when they will ripen in a few days and be ready for market. By continually going through your heaps this way all the fruit will in time ripen, and will not heat enough to injure them; keep them covered with the vines to protect from frost. The product was sold to a canning factory and realized fair profits.

W. SHAW.

Delaware P. O.

RASPBERRY CULTURE.

RASPBERRIES may be successfully grown upon any land that will produce a good crop of roots, although a dark sandy loam is preferable to all other soils. To obtain the best results the land should be in a good state of tilth, and should be thoroughly drained either naturally or artificially, as a cold, wet soil is particularly addicted to the development of fungous diseases to which the raspberry is very subject. A clover sod, or land that has previously grown a hoed crop, is most suitable, and if possible it should be plowed in the fall and a heavy coat of stable manure turned under to supply nitrogen. In the spring a liberal top-dressing of wood ashes should be applied to furnish phosphoric acid, lime, and potash; of the latter the raspberry is a large consumer. Then the land should be thoroughly pulverized with a disc harrow and a smoothing harrow, when it will be in the best possible condition for receiving the plants. These should be procured from some reliable near by grower, as personal observation and advice can thus be had as to the varieties most suitable for your particular soil and climate, and plants thus obtained will take root much more readily than those which have been shipped a long distance.

In our estimation spring is much pre-

ferable to fall for planting, but the work should be done just as soon as the ground can be put in good condition, as there is then less danger of the young shoots being broken off which begin to grow very early in the season. When conveying the plants from the nursery to their new location, care should be taken to keep the roots constantly covered with damp straw or blankets, as a half hour's exposure to wind or sunshine may prove fatal to them. One mistake which is usually made in setting out small fruit plants, is in placing them too close together. The rows for raspberries should be seven feet apart, and should be as long as possible to facilitate the work of cultivation. The plants should be four feet apart in the rows, but the red varieties may be allowed to

FIG. 1301.—PROGRESS RASPBERRY.

form a new stand of canes between each two plants set; all others should be treated as weeds and cut out. This distance allows ample room for horse cultivation, and economy of time and labor is of more importance to the general farmer than a few additional rods of land. Before setting the plants the roots should be immersed in a pail of water, and this will cause the fine loose earth to adhere to them, when they will start growth much more readily. The holes for the plants should be made sufficiently large and deep to admit the fibrous roots without crowding, and the soil should be firmly compacted about the canes. This firming of the soil is an important point in setting out all kinds of plants or trees. The first season a row of low growing vegetable such as potatoes or beans may be grown to advantage beween each two rows of the bushes. Frequent shallow cultivation should be given, and especially after showers of rain, as this will form an earth mulch which will serve to check evaporation and assist in retaining moisture. About the first of September, or

FIG. 1303.—TRIMMED BUSH.

soon after the vegetables have been harvested, the ground should be lightly ridged up to the plants with a one horse plow, leaving a furrow between each two rows of bushes. This protects the roots of the plants during the winter time and allows all surface water to flow rapidly away.

FIG. 1302 —UNTRIMMED BUSH.

I shall describe the method we use in pruning the bushes. In the charts Fig. 1302 represents a bush of the blackcap variety which has been left untrimmed. You will notice that the canes have grown very tall and spreading, and if left in this form they would prove a great drawback to cultivation and gathering the fruit, which would also be much soiled by drooping to the ground when the canes are heavily laden. Tying the canes to stakes is sometimes resorted to, but this is impracticable when a large acre

age is grown. If the canes were cut back in spring at a height of say four feet, it would leave very little wood for fruit production, as there is but one fruit-bearing stem produced from each bud. Fig. 1303 illustrates our method of pruning. The new canes are cut back at the height of two and one-half feet some time during the month of June. This causes them to become strong and stocky and throw out a lateral branch from each bud on the main canes. These branches sometimes grow to the great length of ten or twelve feet. The following March or April, after severe freezing weather if past, we clip these with a hedge shears to eighteen or twenty inches in length. This leaves an abundance of wood for fruit production and gives the bushes a nice circular form about three and one-half feet in diameter, thus affording every facility for cultivation and gathering the fruit.

As soon as the soil is in a fit condition for working, the ridges should be cultivated back to a level again and shallow cultivation should be continued until just before the fruit begins to ripen. As soon as the fruit has been harvested, the old wood should be cut out, removed and burned. By using a V. shaped steel hook for cutting out the old wood, a horse attached to a wooden rake for gathering it into bunches, and a sled for hauling it away, this work is much simplified. When this has been accomplished, the ridging up should again be done. Doubtless many who are present have attempted to grow raspberries, and have noticed the bushes become sickly after a few years and soon die out altogether. This is usually caused by a fungous disease known as anthracnose. It is contagious, is carried in the air, and is most prevalent during a wet season, Fig. 1304 in the charts illustrates a section of cane very badly affected with anthracnose. The first symptom of the disease is the appearance on the young canes, from the first till the middle of June, of small white pits or indentures, surrounded with a dark bluish circle.

Fig. 1304.

These pits soon enlarge and spread over the canes, until in severe cases they are entirely girdled. It also affects the foliage in the form of dark brown or reddish spots, sometimes containing a light centre as shown in Fig. 1305.

Theses pots quickly enlarge and cover the whole surface of the leaves, when they dry and curl up, giving the entire patch the appearance of having had a fire pass over it. When the foliage of a few bushes in a plantation become affected, it rapidly extends itself to others, and in this way will run over several acres in the course of five or six days. In some cases, the bearing canes entirely dry up, while in others, where they still retain sufficient vitality to ripen the fruit, it is much diminished in size and is dry and

Fig. 1305.

tasteless. The remedy, or rather preventive, for this disease is to spray the canes in spring, before the buds begin to burst with copper sulphate solution, composed of one pound copper sulphate or blue vitrol, and twenty gallons of water. This should be followed by three or four later sprayings at intervals, before the fruit begins to form, with Bordeaux mixture composed of five pounds copper sulphate, four pounds lime, and forty gallons of water. We use a barrel sprayer drawn by a horse, and having two lines of hose attached and two finely distributing nozzles, so that one side each of two rows of bushes can be sprayed as fast as the horse can walk.

As to varieties, after testing quite a number we have discarded all but Hilborn and Gregg in black, Schaffer's Colossal in purple, and Marlboro, and

FIG. 1306.—PROPAGATING BY TIPS.

Cuthbert in red. All of these I can highly recommend for this locality.

To sum up, success in raspberry culture lies in thorough drainage, judicious fertilizing of the soil, selecting suitable and hardy varieties for planting, frequent shallow cultivation, systematic pruning, and persistent warfare against fungous and insect enemies.—E. F. AUGUSTINE, Aughrim, in Ontario Farmers' Institute Report, 1897.

SUCCESS WITH SWEET PEAS.

I PLANTED the seed as soon as the frost was out of the ground, fully six inches deep, in a soil rich in manure, and near a low hedge, but fully exposed to sunlight. I planted tolerably thick, using two ounces of the best mixed seed for a double row fifty feet long. A single row would have done as well near the hedge. I did not hoe the plants at all, but instead, to keep down the weeds, I mulched them with lawn shavings. The soil wants to be packed about the roots rather than loosened to insure abundant blooming. I did not even train the vines much. They grew so thrifty that they partook of the nature of the sturdy oak rather than of the climbing vine. In fact they grew with the young hedge which gave them the needed support. I think in a cooler moister climate they ought to be well trained up between woven vines or cords, but here the vines in that condition are apt to burn. I gave them plenty of water, turning the hose on every evening or morning, not for a sprinkle, but a thorough wetting. The heavy stalks daily shot out a profusion of long stemmed blossoms which I as regularly cut. The poorly developed were also snipped to keep off every seed pod. My vines were in bloom for weeks, and some days I cut a large milk-pan full of bouquets for friends and socials.—M. E. A., in Parks Floral Mag.

CRANBERRY PIPPIN FOR EXPORT.

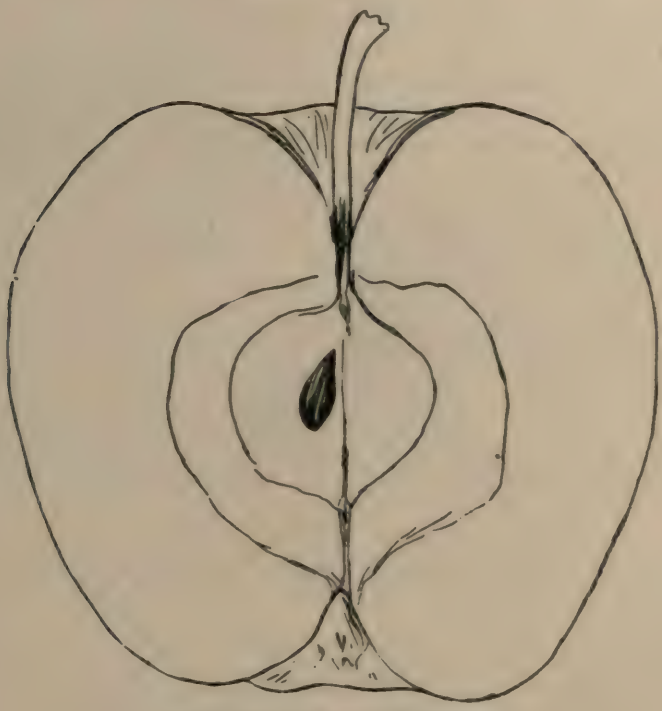


FIG. 1307.—CRANBERRY PIPPIN.

WE are of the opinion that it is dangerous ground to recommend too strongly any one variety of apples for export. We may say what we know concerning adaptability of a variety to a certain section, and cite instances of the successful exportation of certain varieties, and leave people to draw their own conclusions. For instance the Newtown Pippin, otherwise known as Albermarle Pippin, sells at a very high price in the English market. But to plant it would be a serious mistake for Canadian fruit growers, because thus far, it has not been found adapted to Ontario. The King apple sells at a very high price but only suceeds in favored sections—indeed no where does it yield freely enough to make it very profitable. The Baldwin keeps well up, owing to its color. It is always the prominent variety in sale reports, and brings a high price. We noticed a quotation from Hamburg of Baldwins at 21/ per barrel. Possibly this may prove one of our future markets.

We would not plant Pewaukee or Ben Davis in Southern Ontario. A superior apple is the *Cranberry Pippin*, an apple we have grown for many years, and this year exported about two hundred barrels, many of them in apple cases containing about one bushel each. It is finer looking than either the varieties named and better quality. The trees are equally healthy and vigorous, and regular bearer each alternate year.

This variety we have shipped to various markets this season, *e. g.* to Liverpool, Edinburgh and Glasgow. When the reports come in we will make them public for the benefit of the members of our Association. The following is an extract from the "Produce World" published in London, Eng., dated 9th November, 1895.

About three years ago a beautiful apple was imported into Liverpool from Canada called the Cranberry. This was a remarkable apple, both in size and sweet, juicy taste. The Baldwin is also a very fine apple, but people were attached to the Cranberry, and it is perhaps remarkable that the latter class of fruit should not have been imported latterly. Newton Pippins are a type of apple shipped over the Atlantic ferry, and some people, in fact, most people, are inclined to the belief that this apple is unsurpassable; but the public taste is one of perhaps eccentric variety, and where one would place faith in the Baldwin, another's penchant for the Pippin was surprisingly funny. However, there appeared to be little doubt as to the Cranberry's excellence, and it is a matter of regret that the shipment ceased so abruptly, at any rate, declined into utter insignificance as far as Liverpool exportation is concerned. Hope is expressed that the next few days will bring forth a bigger shipment, and my informant before-mentioned has graciously acquainted me of the fact that since advising me of the *Campania's* shipment from New York, another steamer with 2,000 barrels from Boston is to hand, making in all 8,000 barrels.

Notwithstanding our favorable experience with this variety, we would not commend it for general planting in Ontario. We know it is adapted to our soil and climate on the South shore of Lake Ontario; indeed it originated on this parallel, on the Hudson River bank, but it might utterly fail in other locations.

NEW MARKETS FOR OUR FRUITS.

WITH one consent, the fruit growers of Ontario have come to the conclusion that their business is no longer profitable unless some new markets can be opened up for the disposal of their products. With commendable industry the N. D. F. G. Stock Company have been establishing agencies in every town for the better distribution of our fruits in our own province; these towns we have surfeited with all kinds of fruit, and yet we have a surplus and have to accept ruinous prices or else allow it to rot in our orchards.

It is evident that we must go farther and reach some portions of the world where the population is great enough to take our surplus without too much affecting the prices.

Such a country is our own Great Britain, whose vast metropolis, the city of London, alone, contains more inhabitants than the whole of Canada, and numerous other cities containing each hundreds of thousands of inhabitants. This little sea-girt isle has the accumulated wealth of centuries, an over-flowing population, and land too limited in extent to furnish the food necessary for their subsistence, much less the luxuries. Though the temperature is usually higher than ours, the continued fogs from the gulf stream so obscure the sun that many of the finest fruits cannot be ripened out of doors. Grapes for example are grown under glass, and the finest varieties are very expensive, costing from 25c. to 50c. and even more per pound.

Peaches can only be grown against walls exposed toward the sun; they are pruned and trained flat against a stone wall or side of a house, to catch every sunbeam, and thus ripen this delicious fruit. Under such circumstances is it any wonder if peaches bring almost fabulous prices in England, and if there-

fore we can once land our golden Crawfords and Elbertas in Liverpool markets in prime condition, we shall need no Klondike to furnish us gold.

Pears are grown much the same as peaches, being often trained upon the walls to ripen. These fruits are brought over in large quantities from France, and bring excellent prices; but none of them, either peaches or pears, attain the rich gold and scarlet colorings of our Canadian grown samples.

California is wide awake to this golden opportunity of money making. First she flooded our eastern cities with her peaches and her pears until Toronto and Montreal are no longer open to our own fruit growers; and this done, she is reaching over ahead of us to Great Britain. Indeed, for two years past, she has been pouring her fruit into Great Britain via New York, at first with great losses, but latterly with enormous profits.

Shall we fruit growers of Ontario allow these chances to slip away from us, and starve for want of a good market, when California growers, three thousand miles farther away, are growing fat by their enterprise.

Regarding other markets for our fruits, I notice the praiseworthy efforts on the part of the N. D. F. G. Stock Co. to introduce our fruits into Manitoba, the North-West. No doubt the country is vast in extent, and one hundred years from now the population will be dense enough to consume a considerable quantity of our fruit. But now the whole population of Manitoba does not exceed that of Toronto, and probably one-half of these are so scattered over the prairies, that our fruits could not reach them. A few car-loads, therefore, at any time will glut the market, and, counting the enormous freight rates, will bring the shipper sadly in debt.

The United States markets are closed to us, but we notice a sort of retributive justice in operation. During the past few seasons, Canadian fruit has been finding favor in Hamburg, and it looks as if we were about to find an unlimited market in Germany, while late information seems to point toward the exclusion from that country of United States fresh fruit. Some recent shipments of United States apples were found to be infested with San José Scale, and were not allowed by the authorities to land at Hamburgh: and not only that, but an edict was passed prohibiting the importation of United States fruit, except upon the most rigid inspection.

These ports are open to Canada, and, no doubt, will be, unless the scale infests our fruit also. What stronger argument can be brought to bear upon the Minister of Agriculture than this, to show the importance of legislation against the importation of American fruit and fruit trees into Canada.

We have just received a letter from a firm in Antwerp, Belgium, which shows that that country too is open for Canadian fruit, for it asks for regular consignments, giving, at the same time, the best of references.

Australia is also open for our choice Canadian apples leaving here in October and November so as to arrive before January, when their own summer apples are beginning to come into their markets. In a shipment of apples sent to Sydney three years ago, in bushel cases, I had Cranberry Pippins sold at 15/ per case. All we want is proper cold storage, and that market will be of great value to us.

It is encouraging to note that the Minister of Agriculture for the Dominion has decided to push the experimental fruit shipments to a successful issue, during the present season and thus relieve our fruit growers of the danger now threatening them from over production.

PROPAGATION AND PRUNING OF CURRANTS.

SIR,—After reading the article with above title in January number, I thought it might interest your readers to have a short sketch of our plan of currant growing. We commence by making our cuttings (either in the fall or early in the spring), cutting them 4 to 6 inches long, these we bury in sand for a few weeks so that they may form a callous. When ready to set, we mark out a furrow deep enough so that we can cover the entire cutting excepting the top bud. We find that cuttings set in this manner will usually throw up one strong thrifty cane, and such a plant we consider the best possible plant for permanent setting in the field. We then set 7 x 7 ft., and instead of pruning to a tree form, we aim to grow a strong thrifty bush that will renew itself from the roots.

Every year we cut out (either in the fall or the following spring) all crooked or weakly young growth, and if any old canes show evidence of disease, they are taken out also. A weakly side arm is often removed, but main canes are never shortened in. We find that every bush has its own individuality, and it is a harder task to tell just how to trim a currant bush than it is to trim it after you see the bush. We would aim to have from 8 to 10 good strong canes to each bush. If planted closer together than we recommend, it will very likely be best not to exceed 6 or 7. As the bush grows older remove one or two of the oldest canes each year, and leave the same number of the strongest of the new growth. You are thus renewing your bush with young vigorous wood each year. The best of the young growth removed can be used for cuttings for growing new plants.

The currant is one of the easiest fruits to grow, and also one of the most neglected.

L. H. READ.

Grand Rapids, Wisconsin.

PRUNING CURRANTS.

IN dealing with currants the red and white need similar treatments as regards pruning, but this treatment is in no wise similar to that suitable for the gooseberry. Suppose the bush is in fruiting form, that is, in good cropping condition, the best portion of the young shoots need annual removal, with this exception, that where they are needed to fill up spaces then they should be shortened to, say, 5in. or 6in., and close to a bud. In removing all useless lateral shoots up the stem see that a short spur is left, as the fruit is produced from these spurs the following year. This, with the removal of all old wood and thinning out the spurs when they are crowded, is about all that can be said on this subject. These bushes should also be set as advised for gooseberries, and in the autumn the young shoots are usually cut back to two inches. In pruning the black currant, the plan adopted is almost the same as with gooseberries, but the former does not need such free and vigorous cutting, the growth being much less in comparison. It is important that all dead wood be taken out each year, and the shoots and branches be thinned to let in the light. It will do good also to have all unproductive branches or wood

taken out and to work in plenty of well-rotted manure or superphosphate, with a good handful of salt for each bush. The currant, like the raspberry, is willing to keep shady, but only because it is modest. It is one of the fruits that thrive better among trees than in too dry and sunny exposures. Therefore, in economising space of the home acre, it may be grown among smaller trees, or, better still, on the northern or eastern side of a wall or hedge. In giving this and kindred fruits partial shades the bush should not be compelled to contend to any extent with the roots of trees.—Bush Fruit Culture.

THE EFFECT OF SPRAYING BORDEAUX MIXTURE ON FOLIAGE.

IN bulletin 86 of the Cornell Experiment Station, Mr. E. G. Lodemann makes the statement that the large number of applications of Bordeaux mixture applied at that institution during the year 1894, seemed to have an influence upon the thickness of the foliage.

On October the 15th, he says, "leaves were taken from sprayed and unsprayed trees of three varieties of plum—Fellemberg, Bradshaw and German prune,—five leaves from each lot, and in all cases from corresponding portions of the trees. In making the sections the material was uniformly cut from near the midst, in the vicinity of the centre of the leaf, so that no error might creep in under this head.

The average measurements were as follows:

Fellemberg.

Sprayed—10.6 micromillimetres } a gain of 1 9 per cent.
Unsprayed—10.4 " } from spraying.

Bradshaw.

Sprayed—10.9 micromillimetres } a gain 2.8 per cent.
Unsprayed—10.6 " } from spraying.

German prune.

Sprayed—12.9 micromillimetres } a gain of 10.2 per cent
Unsprayed—11 7 " } from spraying.

A micromillimetre = .000039 of an inch.

The difference between the sprayed and unsprayed foliage although slight in the first two cases, was nevertheless in favor of the sprayed foliage. This is plainly shown in the case of the German prune. The particular cells of the plum leaves which were enlarged could not be determined with certainty, but the palisade cells appeared longer in the sprayed leaves."

These statements aroused my curiosity and I suggested the matter to Mr. J. C. Macdonald, one of our third year students, as a line of investigation which he might pursue with interest and profit to himself and others. He commenced the work in January last and the results of the investigation may be briefly stated as follows:

It is a well-known fact among those who have sprayed with the Bordeaux mixture, that if the quantity of lime is not sufficient to neutralize the acid properties of the copper sulphate, the leaves to which it is applied will be scorched or burned by the acid; hence one of the objects of the experiment has been to determine the comparative effect of mixtures containing different quantities of lime.

Twelve seedlings, having an average height of about 20 inches were used for the experiment. They were potted and placed in the green houses in the first week of January, and forced into leaf. On February the 10th, the first leaves had attained about half their normal size and the first spraying was done.

The seedlings were paired as closely as possible, according to size and species;

one of each pair was sprayed, and the other left unsprayed as a check plant. The six pair were then divided into three lots of two pairs each for treatment with Bordeaux mixture of different compositions.

Unsprayed Nos.	Sprayed Nos.		
1	2 (pear)	Sprayed with	4½ lbs. cop.sulph. 2 lbs. lime, 40 gals. of water
3	4 (pear)		
5	6 (peach)	Sprayed with	4½ lbs.cop. sulph. 4 lbs. lime 40 gals. water.
7	8 (qu'ce)		
9	10 (pear)	Sprayed with	4½ lbs.cop. sulph. —lbs. lime. 40 gals. of water.
11	12 (pear)		

A small atomizer, such as is used for throat troubles, was used, in order to ensure an even wetting of the surfaces of the leaves. Four successive applications were made on February 10th, 16th, 23rd, and March the 1st respectively.

On March the 10th, specimens of leaves corresponding in size, age, and position on the stem, were taken and put through the process of imbedding in paraffin, in order that sections of exactly the same thickness might be made of them. The plants were afterwards sprayed on March 16th, 24th, and April 5th; leaves were again selected in the same manner and imbedded by the same methods.

Transverse sections across the central part of the leaf were cut with a microtome; so that the sections were of the same thickness. No noticeable changes were observed in the foliage of the plants, until the time of the fifth application, when two and four which had been treated with the mixture containing the small amount of lime, appeared somewhat crumpled, but did not turn black. A critical examination and comparison of all the plants after the last spraying, revealed a marked difference between the color of the sprayed and the unsprayed plants. Those treated with an excess of lime mixture were decidedly greener than the unsprayed ones, while those treated with the neutralized or second mixture also showed a deeper green, though not so marked as in the previous case. A microscopic examination of the leaves of Nos. two and four, which were treated with the unneutralized solution, failed to distinguish any gain in the amount of chlorophyll in the cells. So this experiment seemed to prove that the increased greenness of the foliage was in direct ratio to the quantity of lime used; and an examination of the sections of the leaves bore out the observations made on the external appearance. The most noticeable feature was the increase in the number of chlorophyll granules, both in the palisade cells and in the spongy parenchyma of the sprayed leaves. Thus the increase was in proportion to the amount of lime used.

The chlorophyll of the sprayed leaves was also a brighter green than that of the unsprayed.

In many places the treated leaves showed a third layer of palisade cells more or less continuous; in the untreated leaves, nothing more than a few scattered palisade cells were seen in addition to the usual double layer.

Measurements of the thickness of the leaves were made by means of the micrometer, from six to twelve of each leaf having been taken. The results in averages were as follows:

No. 1 (plum) unsp'ed, 141 mic'tres		diff'ence =4 2mms
No. 4 (plum) spr'ed 136.8	"	loss fr sp'ing=2.3%
No. 3 (pear) unsp'ed 177.6	"	diff'ence=4.2 mms
No. 4 (pear) sprayed 181.8	"	g'n fr sp'ing=2.3%
No. 5 (peach) unsp'd 123	"	difference=9 mms
No. 6 (peach) spr'ed 132	"	g'n fr sp'ing=7.3%
No. 7 (quince)uns'ed 169.3	"	diff'ence=1.1 mms
No. 8 (quince) sp'ed 168.1	"	g'n fr spr'ing=16%
No. 9 (pear) unsp'ed 162.1	"	diff'ence=12.1mms
No.10(pear) sprayed 174.2	"	g'n fr spr'ing=7.5%
No.11 (pear) unsp'ed 168.2	"	difference=18 mms
No.12 (pear)sprayed 186.2	"	g'n fr sp'ing=10.7%

It might be explained that in the case of the quince, No. 7 was a much more vigorous plant than No. 8.

While the wide variations shown are

somewhat unsatisfactory; yet there is sufficient data to indicate a gain from spraying and an additional increase of thickness where an excess of lime was used.

These experiments conducted in the greenhouses, where most of the conditions were under control, give perhaps more valuable results than if they had been carried on in the open air, as rain and other atmospheric disturbances which would affect the plants, were entirely avoided. A steady temperature, a regular supply of water, without washing the leaves an even spraying of the leaves with an atomizer, all went to secure uniformity of surrounding influences. On the other hand, the dews, which are deposited on outdoor plants, might have the effect of bringing into solution some of the compounds of the dried residue of the mixture adhering to the leaves.

The results, on the whole, confirm Lodemann's statements, that the increased thickness of the leaf resulted from spraying with Bordeaux mixture, and that the thickness was probably due to an increase in the length of the palisade cells.

Lodemann's measurements, however, are manifestly wrong, as the plum leaves examined by him are stated to be "from 10.4 to 12.9 micromillimetres in width," or about the same width as length of a good-sized microbe. Leaves would be very flimsy structures if this were the case.

With regard to the increased greenness of the foliage, it is well-known that calcium is especially abundant in the leaves of green plants, and it is probable that some of the calcium of the lime in the Bordeaux mixture is absorbed by the leaves. Boussingault found that if calcium sulphate be placed on the leaves of a plant it will disappear in a few hours, and sooner on the lower than on the upper surface. Further, the effect of depriving plants of calcium as an ingredient of their food supply is well shown in the text books on Physiological Botany. Hence it is not improbable that the increased greenness in the leaves sprayed with an excess of lime, is caused by the leaves absorbing an excess of calcium.

CONCLUSIONS.

Bordeaux mixture has an invigorating effect on leaves, as evidenced by the increased thickness and the marked development of the chlorophyll granules in the cells. This increased vigor is of much importance, as a strong healthy plant is always in a much better condition to withstand the attacks of fungus diseases than a weakly one.

Instances of losses from improperly made Bordeaux mixture indicate that a lack of sufficient lime may result in injury. Crumpling of the leaf resulted in Nos. two and four from lack of sufficient lime.

An excess of lime gave better results than smaller amounts. The leaves seem able to take up some of the lime; and additional lime give the foliage increased vigor. Hence, it might be advisable to use larger amounts of lime than are generally used in the mixture. The increased thickness of the leaf is probably due to the increased development of the palisade layers of cells.

F. C. HARRISON,
Bacteriologist.

O.A.C. Guelph.

NUT GROWING FOR PROFIT.

AT a recent meeting of the Massachusett's Horticultural Society, a paper was read by F. M. Bartram, on this subject. We give an extract, treating of the chestnut :—" From a commercial standpoint the chestnut, for this vicinity, seems to me by far the most promising of nuts. We know the tree thrives and bears here, which are important factors already established. The market takes all the American chestnuts, and many thousand pounds besides which are imported from Italy and France. They are mostly sold along the streets, much as peanuts are. Consider the vast increase possible in this line, and the far greater demand when they become as frequently used for desserts and relishes as their merits deserve. Mark the frequency with which the chestnut appears in newer cookbooks for stuffings, dressings, etc., and remember that chestnuts are even now found with vegetables upon that class of American tables that soon have innumerable imitators ; and prepare for this demand, which is small, indeed, compared with the possible and probable consumption when chestnuts are dried, ground into flour, and become the staple article of diet that they have so long been in southern Europe. Not only chemistry, but the experience of generations, has demonstrated the fitness of chestnut meal for human food.

Chestnut trees do best on high, well-drained land with open sub-soil ; such hillsides as abound in New England. Stoney land is no objection ; chestnuts do not bruise in falling as plums would. Once established, a chestnut orchard continues in profit for decades or even centuries. No protection and very little pruning are required. No large fertilizer bills encroach upon profits ; their roots go deep into the ground and get fertility far below the reach of annual crops. An established chestnut orchard will yield as many bushels per acre as corn, and with little more than the expense of gathering. Chestnuts brought $14 per bushel at the first of last season for the best sorts. These fell as the season advanced to $12 and $10, and to $7 and $8 for poorer sorts. If farmers should get such prices for corn they would raise nothing else, one would think.

Chestnuts do not require constant attention and the gathering can be done by cheap labor. They are not perishable and can be stored or sent great distances to get a good market price. Chestnuts do not need expensive packing boxes for shipping.

There are three distinct strains of chestnuts, the American, European and Japan. The American nuts are small, usually fuzzy, and of the best quality. The European trees have given us a strain of very popular chestnuts, including Paragon, Ridgely, Scott and a host of other good kinds. In Japan there are three kinds ; the largest and best is being planted here ; the choicest seedlings are named and are propagated by grafting. The trees bear when very young and are good croppers of nuts of the largest size, although not unusually of the finest flavor.

Many are deterred from embarking in nut culture because they think they have to wait long for returns, but the fact is you do not have long to wait.

In conclusion, let me call attention again to the timber value of nut-bearing trees. I am still more anxious that their ornamental properties be remembered, and especially by the owner of a home

with but limited surroundings. Let him who feels that much of his earnings must be sacrificed upon the altar of utility not forget that there are trees as handsome as any, that will yield each year a product desirable at home or salable anywhere.

Let me recommend nut culture to the farmer who would increase his income. No one need be deterred because he has large acreage to devote to nut orchards alone. There is surely room for that tree which, while crowding out nothing useful, will be an enduring source of satisfaction.

THE CAULIFLOWER.

To the Editor of the Horticulturist:

SIR,—Cauliflower is plentiful in this market direct from California. Prime heads five inches in diameter retail for 25 cents, and smaller ones for 18 to 20 cents. They are sent here in carloads. They must pay winter freight charges in addition to cost of fire protection from frost If such products can be sent from Lower California, 3,500 miles by rail in midwinter and retailed in New York and Boston and intermediate towns and cites at a profit, it would seem that distance is no longer to be considered in seeking a market for green fruit and vegetables.

In my garden at Oshawa I raised large late *Le Normand* cauliflower 12 inches and more in diameter, firm, white and perfect. Such heads would have sold in this market last November at 40 to 50 cents each.

The climate of Ontario is better suited for the successful production of cauliflower than that of California. Freight charges from Ontario with duty added should not be greater than freight charges alone from the Pacific Coast. During January I have been enjoying Easter Beurre, Glout Marceau and Patrick Barry pears, also from California. For very large, fine and perfect specimens I have paid 10 cents each, medium size but perfect fruits, 5 to 8 cents each. One Easter Beurre measured 12 inches in circumference. It was perfect but the quality not as good as some of the smaller fruits. These pears came packed in small cases, four layer of fruit in each case. A retailer can dispose of a case without loss from decay and is quite willing to pay the extra cost of small cases.

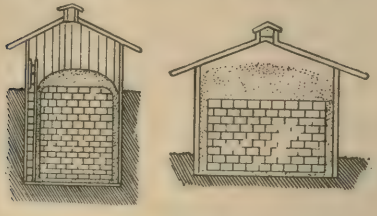
When prime Naval oranges from California are retailing at 4 cents each the masses will not buy pears at 10 cents each. In this market quality and condition determines the price. Fruits and vegetables of prime quality and in prime condition always command ready sale at liberal prices. For such goods the market is never overstocked.

FRANCIS WAYLAND GLEN.

Brooklyn.

CONSTRUCTION OF A FARM ICE-HOUSE.

TWO classes of farm ice-houses are practicable. If high dry ground or a hill-side is available, a pit or submerged house can be constructed. Make a hole in the ground of the desired size, the bottom highest in the middle, so that the water from melting will drain toward the walls. At each side place a line of tile leading from the house to the side of the hill, or to another drain or ditch. Drainage must be perfect, or results will not be satisfactory. For walls, put in a frame made much like that of an ordinary corncrib, with the boards close together and on the inside of the uprights. The joists should be 2 x 6 pine or hardwood, depending upon which is the cheapest. Stone may also be used. The roof is best if 2 x 6 studding is used, boarded on both sides; but any kind of a roof will serve, especially if covered with hay, straw, or stalks to keep out the heat. If the pit is in a



a FIG. 1308.— *b*

shady place—which is always desirable—the gables may be left open for ventilation. If sun strikes the roof, ordinary ventilators must be provided. Drainage must be perfect and the ventilation adequate, but it is best to have as little circulation of air as possible. A door must be made for taking out ice, and as the supply is lowered a ladder becomes necessary. Fig. 1308 *a* shows such a pit. If water stands near the surface of the ground, admitting of a

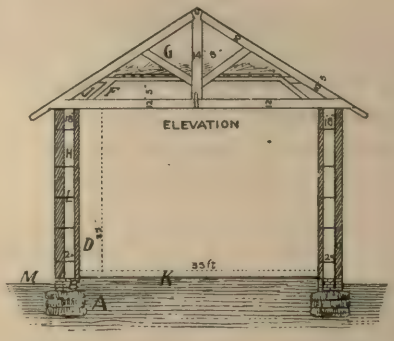


FIG. 1309.—ICE-HOUSE.

possibility of its rising in the pit, the safest way is to build the house entirely above ground, taking the precautions outlined above as to location, drainage and ventilation. A floor is not absolutely necessary, although desirable. A cheap shed with rough posts, carefully double boarded and the air space filled with sawdust or chaff, will be better than nothing, and if a straw stack or heap of cornstalks could be built over it, such an affair would keep ice fairly well. But thrifty farmers believe in building a durable ice-house that will last. The common type is shown in Fig. 1308 *b*. A 6-in. dead-air space is not

A DURABLE ICE-HOUSE

sufficient, even if the outer boards are matched and the inner square edged, with tarred paper underneath both. Some think the paper is hardly necessary under the inside boards if they are matched, but square-edged boards may be used on both sides with paper on both sides of studding. Fig. 1309

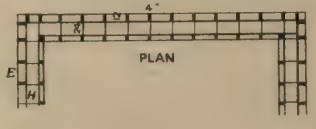


FIG. 1310.—PLAN.

shows the plans of one of the largest and most experienced firms in the ice trade, which is claimed to embody all of the essential particulars necessary for a perfect ice-house, unless it be deemed desirable to put in a ventilator to carry off the heated air radiating from the roof in midday. In the elevation plan, A is a dry wall, B mortar wall, C outer posts, D inner posts, E sills laid in lime mortar, F partition under roof, G floor with hay covering, H spaces for filling between walls, J spaces for filling under roof, K double flooring laid crossways, L ties of hoop or band iron, M natural surface of ground. In the ground plan, doorways are made from top to bottom at any convenient place (the gable ends are best), boarded and filled as the rest of the house after the ice is put in. —Farm and Home.

WOOD ASHES.

THERE is a growing interest in the subject of wood ashes, and their use as a fertilizer. This is largely owing to the fact that long cultivated lands are beginning to show a lack of the fertilizing constituents that are supplied by ashes, and a desire on the part of the tiller of the soil to increase and improve his yields. Large quantities of this valuable fertilizer are annually exported from the Province; and what makes it worse is that they are gathered chiefly from the farms which need them so badly. To supply the growing demand for information, and to gain a more definite knowledge of the fertilizing constituents of wood ashes, we have, during the last year, analyzed the ash of most of the Ontario forest trees, fruit trees and small fruits.*

The growing plant gathers all its mineral constituents from the soil in which it grows, and these, not being combustible, are left as ash when the plant is burned; consequently, the ash must contain all the mineral constituents that are essential to growth. These are potash, phosphoric acid, lime, magnesia, iron and sulphur. These substances form a very small part of a plant, yet without them no plant could grow and produce seed; in fact they are indispensable to life. Of the six essential plant-food substances named, potash and phosphoric acid are the most important, not only because they are taken up by the plant in large quantities, but also from the fact that our average Ontario farms do not contain them any too abundantly. Wood ashes, therefore, are usually valued according to the amount of those two constituents which they contain. Although potash and phosphoric acid are the most valuable plant food substances in ashes, ashes also contain large quantities of lime, which is of considerable value to the growing plant. Lime is usually present in the soil in sufficient quantities to supply the wants of growth, yet its application may produce marked results. By acting chemically on certain constituents in the soil, plant food, especially potash, is brought into an available form. It neutralizes the free acid of the soil, and thus helps along the process by which vegetable matter is changed to a form in which the plant may make use of its nitrogen. It also tends to im-

*For full reports of this work, see the Report of the Professor of Chemistry, in the Ontario Agricultural College Report for 1896. Some additions will be made in the report for 1897.

prove the mechanical condition of both clayey and sandy soils.

The amount of these fertilizing constituents contained in an ash will vary according to the source from which it is derived. The ash from young branches will be richer in potash than that from the older parts of the tree. Different soils will supply varying quantities of potash, phosphoric and lime. The following table gives the composition of a few of the more common ashes that we have analyzed. The ashes were obtained by carefully reducing the several woods to a comparatively white ash. Each sample, therefore, is true to name. The figures given express the percentages of the various constituents contained in the dry ash :

Name of Ash.	Potash.	Phosphoric Acid.	Lime.	Magnesia.	Iron.	Sulphuric Acid.
Hard Maple.....	9.31	2.03	45.24	.....	.....	1.14
Beech.....	7.58	1.39	41.21	6.16	.30	Traces.
Cedar.....	3.30	.98	49.06	2.49	.70	.77
Swamp Elm.....	35.37	.45	23.64	6.48	.19	Traces.
Black Ash	25.30	1.20	49.04	7.42	.22	.71
Hard Coal	Traces..	16	Traces..	.....	5.32	.41

The figures show clearly why ash buyers are so anxious to get black ash or swamp elm ashes, but at the same time it must not be forgotten that these ashes are very light and bulky; consequently there may be more potash in one measured bushel of hard maple ash than in the same bulk of swamp elm ash. The hard woods contain a larger quantity of phosphoric acid than the soft woods. Cedar, as would be expected, is poor in both potash and phosphoric acid. The price of potash and phosphoric acid, in the form of artificial fertilizer, during the last year, has been 4 and 4½ cents per pound respectively. Figuring the value of the above ashes on this basis, we have the following as their value per ton :

	Potash.	Phosphoric Acid.	Total.
Hard Maple.....	$ 7 44	$ 2 71	$10 12
Beech.....	6 06	1 25	7 35
Cedar...	2 64	88	3 51
Swamp Elm.....	28 29	40	28 69
Black Ash.....	20 24	1 08	21 32

In many parts of the Province ashes can be bought from the producer at from 3 to 5 cents per bushel, or at a rate of $1.25 to $2.10 per ton. These ashes, in many cases, will contain 10 to 15 per cent. of moisture, but after allowing for this, we see how far the price received is from their real value. By reference to the table of analysis in the College Report, and knowing from what woods the ashes on hand were obtained, one may calculate — at least approximately—their value. But the best way to know their value is by noting the increased yield when they are applied to crops requiring potash.

The caring for and application of ashes must receive special attention. If not properly housed while accumulating, much of the soluble plant food will be lost by leaching. If not applied to

those crops which are in special need of potash, no noticeable results may be obtained. Further, if mixed with farmyard manure, they may do more harm than good; because they tend to liberate, as ammonia, the nitrogen of the manure. The crops which are most benefitted by wood ashes are the legumes (clover, peas, beans, etc.) corn and potatoes. If we may judge by the amount used by fruit growers, they are fully aware of the value of wood ashes in the orchard. — R. A. HARCOURT, Asst. Chemist O.A.C., Guelph.

HELPS IN THE GARDEN.

MR. E. S. GOFF, of the N. Y. Agricultural Experiment Station, read a paper upon "The Farmer's Garden," before a farmers' institute at Lockport, N. Y., in which he said: "In order to grow radishes free from maggots in the roots, I would grow them in a bed of sand, and to prevent the flea-beetles from destroying the foliage, I would place this bed, if possible, upon a bit of sod ground, and surround it with a tight frame of boards at least a foot high. For the green cabbage worm, I have found pyrethrum or Persian insect powder the most satisfactory destroyer. If the powder is of good quality it will bear diluting with twice its bulk of air slaked lime or flour, and if the mixture is allowed to stand a few hours before being applied, it will prove more effectual than if put on immediately after mixing. The Woodason bellows is an excellent tool for distributing the powder. The best time to apply it is on a quiet evening, when the dew has just commenced to fall.

"For the striped cucumber beetle, prevention is the only method that I have found satisfactory. Cover the hills before the plants come up, with frames made of narrow boards with mosquito netting tacked over the top.

For the squash vine borer, I find cobs dipped in coal tar and placed among the plants a great benefit, but not a perfect remedy. The cobs should be placed in the hills about the middle of June, and they should be dipped in the tar again once a month or so, during the season.

For the currant worm, I have found nothing better than the old remedy, viz.: powdered white hellebore applied either dry, or with water.

BEGONIAS.

Flowering varieties like a night temperature of 60 degrees, sun and moisture. Rex varieties, same temperature at night, no sun, but strong north or east light; do not spray surface of foliage, or allow water to drip on it; keep just moist; add to compost a little sharp sand to make open soil. Tuberous varieties like sun, or will do with partial sun, about the same temperature, and are cared for in starting, drying off, and in dormant state the same as Achemines. Make good bedders in summer garden.

⁂ Doings of Other Societies. ⁂

QUEBEC FRUIT GROWERS.

Annual Winter Meeting of the Society at Lachute.

THE fifth annual winter meeting of the Pomological and Fruit Growing Society of the province of Quebec was held in Lachute, recently. Mr. R. Brodie, president of the Society, occupied the chair, and there was a large attendance of those interested in the development of horticulture in the province.

The president, in his annual address, said that the past year was one of almost famine in fruit production, following a year of plenty. The plum crop in Kamouraska and L'Islet had been a failure, and in the Montreal district a great many apple trees were killed outright. He urged that the Quebec Government should follow the example of the Ontario Government, and employ experts to instruct the farmers how to spray and care for their trees in general. He praised the energy of Mr. Fisher, Minister of Agriculture, in making the shipping of fruit in cold storage a success. Now Quebec fruit growers could place choice autumn and early winter apples in good condition on the English market, which was not possible without cold storage.

Mr. Auguste Dupuis, the well-known horticulturist, of L'Islet, read an instructive paper on the effects of the winter of 1896 and 1897 on the orchards of the eastern portion of the province of Quebec. He made the regrettable statement that in this district one-third of the apple trees and three-fourths of the plum trees had been killed last winter. Some of the latter were brought from France by the earliest settlers of the province of Quebec and had perpetuated themselves since but were now almost eradicated. Mr. Dechene, provincial secretary of agriculture, had promised to give three thousand plum tree, to the fruit growers in the district, and the Dominion Minister of Agriculture had promised to assist. Mr. Dupuis thought it possible that they might be able to secure from France some of the old varieties of plums, which had proven so profitable below Quebec.

Mr. Percy H. Selwyn, Ottawa, and Mr. Gilbert Wintle, two experts in agriculture, read interesting papers on bees and bee-keeping. During the discussion which these papers called forth, a motion was passed in favor of legislation similar to that now existing in Ontario to protect bee men from the danger involved in spraying fruit trees during bloom—a practice which is destructive to bee life, and injurious to the fruit trees themselves.

An interesting address was given by Dr. Fletcher, botanist and entomologist of the Experimental Farms, on insects injurious to fruits in 1897. The speaker dwelt on the importance of proper spraying as the only means of preventing the depredations of insects on fruits and fruit trees. He agreed with the resolution of the society that trees should not be sprayed in bloom as it injured the honey bees. He dilated on the advantages of cold storage for fruit, and predicted great profit from it to fruit growers and farmers.

Dr. Fletcher produced a specimen of San Jose scale and reminded the meet-

ing that a few years ago it was thought by scientists that it would not live east of the Rockies, but now it had established itself in New Jersery and other states, and was committing untold depredations. It was now occurring injuriously in all the fruit growing states with the exception in the east of New Hampshire, Vermont, Maine, and Rhode Island. Hundreds of thousands of trees had been destroyed within the past few years. He regretted to announce that the San Jose scale had appeared in a few places in the peach belt of Ontario and in British Columbia. The Ontario Government had legislated that all trees affected with it should be destroyed, and one-third their value paid by the Government.

"There is at the present time," said Dr. Fletcher, "urgent demand being made on the Dominion Minister of Agriculture to legislate for the total prohibition of all nursery stock being imported from the States into Canada. I have not seen my way to recommend this, so serious is it to interfere with established channels of trade. The Minister of Agriculture wishes an expression of opinion from this society with regard to the advisability of passing the law demanded. I shall not say that the San Jose scale will not enter the Province of Quebec. I did not think it would get into Ontario, but it has. I warn you to take all precautions against it. I advise you to get your nursery stock in Canada, for the Northern States are infested with the most dangerous pest ever known It is not worth your while to take the risk by buying stock in the United States when you can get it equally good or better in Canada. I cannot tell you whether the Canadian Government will pass legislation on the matter, but you can commence by protecting yourselves. We have tried not to create unnecessary alarm, but matters have become so serious that Canadians must be warned against it."

Mr. Brodie pointed out that the orchards near Montreal were in great danger because of the importation of California fruit.

Dr. Fletcher said it would cause great trouble if the importation of fruit were prohibited, but at all events although the scale was on the fruit, so far it was believed that it could not spread from it. All the countries from which we took fruit made it a misdemeanor to export fruit infected with the San Jose scale.

To Mr. Newman Dr. Fletcher stated that the scale had not yet got into Quebec. It affected every kind of tree except conifers, and in New Jersey it was believed that it had spread even to the forest trees. This would be deplorable in Canada.

Rev. Mr. Hamilton advocated stringent laws keeping out all United States plants and trees. Canadians did not need one of them. The United States were fond of putting up Chinese walls against Canada and we should retaliate for our own protection.

Prof. Fletcher pointed out that eighty per cent. of our trees were imported from the United States.

Mr. Fisk said that the birds carried the scale from the United States to Canada, and we could not legislate to keep them out.

Prof. Fletcher said every American plant imported was now reported from the Custom House to the Minister of Agriculture and traced to its destination and the consignee warned to be on his guard.

Mr. Crandall, the Canadian Government trade agent in England, spoke on the value of the British market for our fruit exports. He said that the Provincial Governments and the Dominion

Government of Canada had done more than any governments in the world in the matter of paternalism in connection with agricultural product and their sale. He held that it was useless to look to the United States market, and that Great Britain was our only hope. It was an inexhaustible market for surplus products of both the United States and Canada, and having recently returned from England, he was able to say that there was a great desire to encourage trade with Canada, and a very strong and growing feeling in favor of giving preferential trade to the colonies. He saw Canadian products of all kinds landed in England last autumn in such bad condition that he was ashamed to be recognized as a Canadian. Apples had been shipped with fruit of first class quality at each end of the barrel and perhaps a bushel of culls in the centre. If such a thing became common the English people would not be fooled, and Canada's trade would be ruined. He urged Canadian apple growers to be careful in future in catering to the taste of the English consumers. For small consignments of specially selected fruit he would advocate shipping in cases of about fifty pounds, but for large shipments he did not know that they had yet discovered any improvement on the barrel.

Mr. Brodie asked in what manner should tomatoes be sent to England. This was a matter of great importance to producers on the island of Montreal.

Mr. Crandall said that it did not matter much if the tomatoes arrived in good condition. The Grimsby people first shipped very large tomatoes last year, but it was a failure as the English people wanted a small round tomato with a fine skin.

Mr. Shepherd said that for fifteen years he had been shipping to England the choicest table apples in cases, but got no profitable result until he made trade connections with special firms who sold them. He believed there was no use shipping to ordinary produce dealers in cases. They allowed nothing for the special care and extra expense in putting them by. In fact, in 1895 he lost five shillings a case on some.

Mr. Crandall said that next year they would endeavor to make further improvements on steamers in the matter of getting rid of the hot air in the hold of a vessel carrying apples. This would improve their conditions.

Mr. J. M. Fisk, of Abbotsford, read an instructive paper on "Pruning."

Mr. R. W. Shepherd, speaking on the failure of the apple crop of 1897, said:

No doubt, to a great extent, at least, the phenomenally heavy crop of 1896 was the cause of the small crop of 1897. But we must look further for the cause of the bad quality of this small crop. Excepting, perhaps, a few early varieties, the whole crop of this province was undersized and ill looking. Never in my experience have I seen such a miserable crop of Fameuse, as that of the past season. No district seems to have been more favored than another, and the proportion of number one fruit in the crop was not, I believe, more than five per cent., and in some cases even less than that. As a general rule, we orchardists of the Province of Quebec have the great advantage of snow protection to the roots of our trees; but the winter of 1896 97 was an exception to that rule, and, consequently, the roots of the trees were exposed to the very severe and continuous frosts of last January and February, which penetrated four and five feet below the surface of the ground.

Those orchards in sod, although the trees were much shocked and injured, were able to survive and feebly develop their fruit. The small size of the fruit,

therefore, must, I think, be attributed to the injury the roots of trees were subjected to during last winter, and the tremendous growth of fungus was, no doubt prompted by the weak condition of the trees, in consequence of the injury done to the trees by frost. The freezing of the roots were even more pronounced and noticeable in trees which were standing in ploughed or cultivated land, these trees being with few exceptions, badly injured, or in fact, killed outright, unless they had been protected by heavy mulching. These root-killed trees retained, generally, enough vitality in their trunk and branches to enable them to leaf out and perhaps endure for a month or two, but all, or nearly all, succumbed before the summer had expired.

One remarkable instance of the effect of frost on the roots of trees was particularly noticeable in one of the orchards of Mr. Robert Brodie, our president. This orchard, on a hill at Coteau St. Pierre, Montreal, contained, perhaps, 250 bearing trees, probably 25 years planted, all magnificent trees—one half in sod the other half in plowed land—those in grass (which had been cut once during the season and the after growth allowed to lie down) thus affording a good winter protection to the roots. When I visited the orchard last October, the trees in plowed land were almost all dead or so weakened that I believe that they were beyond redemption. Whereas those in sod were, seemingly, in very fair condition, and bearing a good crop of apples. It seems to me that the experience of last winter teaches us a severe lesson on orchard cultivation. We cannot afford to loose our well established bearing trees in that wholesale way.

We must either keep our bearing trees in sod or, if we cultivate the ground between the trees, we shall have to mulch the ground very heavily under the branches of the trees as far as the roots of the trees extend. If sheep have been grazing in the orchard it will not do to trust only to the sod protection in such a case, but I would recommend a mulching, also, on top of the sod. But Mr. Brodie's plan, to allow the aftergrowth of grass to become matted and lie down, is a most excellent system and affords the best possible protection. With last years' experience before us we cannot trust to the old-fashioned snow mulch as our only protector, but better be on the safe side and give more attention to winter protection of the roots of our orchard trees and thus discount any chance of root killing.

Mr. Dupuis, the new president, who is also vice-president of the Council of Agriculture of the Province of Quebec, announced that he had received a letter from Hon Mr. Dechene, Provincial Secretary of Agriculture, saying that the Government had decided to establish experimental fruit stations throughout the province. An Order-in-Council would be passed to carry out this policy. This announcement was received with gratification, as the scheme had been urged upon the Government by the Society.

A feature of the convention was an exhibit of splendid specimens of different varieties of apples by members of the Society. Among the exhibitors were R. W. Shepherd, J. T. Gibb, Como; C. P. Newman, Lachine; R. Hamilton, Grenville; Malcolm Smith and Norman Jack, of Chateauguay; Capt. Halcro, Hudson. Mr. Newman exhibited Duchess apples, a summer apple maturing in August, which had been kept in cold storage, were now in perfect condition, and were selling at fancy prices.

NOVA SCOTIA FRUIT GROWERS.

THE Thirty-fourth annual meeting of the Nova Scotia Fruit Growers' Association was held in Wolfville, on January 26th, 27th and 28th. The attendance was good throughout the meeting, and the papers and discussions were of unusual interest. Of course the San José scale was the subject of paramount interest to all, and President Bigelow voiced the sentiments of the meeting when he said in his opening address: "The San José scale has invaded fruit trees in all parts of this continent, and is the most destructive and difficult to destroy of any insect pest. It is not yet known to be in Nova Scotia, and you will be called upon to recommend strong legislation to prevent its appearance here. The man who plants an imported nursery tree in Nova Scotia this year is his own worst enemy, and should be dreaded and despised by fruit growers generally."

The general opinion was that everything should be done to delay, as far as possible, the day when we shall be called upon to fight this dreaded pest in our orchards, since methods of combatting it are certain to improve with each year.

The matter was referred to a committee, with instructions to draft a bill which should give to orchardists the best protection possible.

The subject of next importance was our apple trade with Great Britain. An entire session was devoted to this discussion, and many interesting and important facts were given by the different speakers.

Mr. John E. Starr, who was appointed by the Dominion Government to investigate this subject, said that in his opinion it was of vital importance to the fruit growers to secure better ventilation for the apples while crossing the ocean, a large part of the damage which they sustain being due to lack of attention to this point. He said that he knew from personal observation that apples shipped last October, and well ventilated during the passage, arrived in prime condition; while later shipments, which should have been in even better condition, but which were closely packed on account of greater demand for room, were seriously damaged by heating in the ship's hold. Gravensteins, when subjected to such treatment, are scarcely to be recognized, having lost their characteristic flavor and being dull and unattractive in color.

A radical change in this matter of storing apples in vessels is needed. Whereas now all the skill of the stevedore is employed to pack the largest number of barrels in the smallest possible space, the object *should* be to so distribute the apples that a sufficient number of air passages should be left to admit of adequate ventilation. This would necessitate the use of lumber to hold the barrels in place, but this could be disposed of on the other side for as much as it cost. Dependence should not be placed entirely on the full-mouthed ventilators now used to force air into the ship's hold. They are quite effective when the ship is running against the wind, or even when there is a calm. But in the event of the ship running directly with the wind, there is not the slightest movement of air in the cargo.

Some system of exhaust fans should be provided for such emergencies. In years of large crops the danger of this

overcrowding is greatest, because there is the greatest demand for space. Yet this is the very time when apples should be placed on the market in the best possible condition, for when fruit is cheap it goes to many parts of Great Britain not usually reached, and if the fruit is good, these new customers will buy again the following year, even though the price be considerably advanced.

Another point emphasized by Mr. Starr and others who spoke on this subject, was the importance of shipping each variety in its season. Do not hold back Gravensteins in the hope of getting higher prices, and then ship them when the market calls for Kings and Ribstons. The result is disastrous to all concerned.

Mr. Henry Shaw, of Waterville, gave an account of some very interesting results obtained by him in irrigating his orchard. He has irrigated for the past two seasons. In 1896, in common with those who did not irrigate, he had a full crop. In 1897, on trees thoroughly irrigated the previous year, he had another full crop. Trees which had received a scant supply of water gave a half crop, while those which had received no water gave practically no fruit. The outlook for 1898 shows corresponding differences. The trees not irrigated, after a year's rest, promise a fair crop; but those which received some water promise a better crop, while those thoroughly watered (though they have borne two full crops in succession) now give promise of the largest crop of any trees in the orchard. These results are certainly important, as throwing some light on the vexed problem of how to produce annual crops of fruit.

Other important subjects discussed were: — "Spraying," "Cranberries,," "Black-knot," "Pruning" and "Cold Storage."

The following officers were elected: —J. W. Bigelow, Wolfville, President; Peter Innes, Kentville, Vice-President; S. C. Parker, Berwick, Secretary; Geo. Munro, Wolfville, Treasurer.

F. C. SEARS.

COBOURG HORTICULTURAL SOCIETY. — At the annual meeting of the Cobourg Horticultural Society it was decided to continue in affiliation with the Fruit Grower's Association of Ontario, and to arrange for several lectures on fruit and flower life by eminent experts to be given this winter. The treasurer's report showed a cash balance of $25 at the end of the year, after paying all expenses. We give the following extract from the secretary's excellent report for the year 1897: During 1897 the work of this society was devoted mainly to the introduction and distribution of choice varieties of plants, shrubs, bulbs and trees, for the decoration of home grounds—for garden propagation and orchard cultivation. Of these new varieties the largest quantities were distributed as follows: Fruit trees, 75; roses, 300; hydrangeas, 50; cannas, 300; clematis, 100; gladioli. 5,000; hyacinths, etc., 500; lilacs, 25; lillies, 50; besides anemones, chrysanthemums, altheas, hibiscus, spireas, deutzias, syringas, golden elders, honeysuckles, ampelopsis, etc., in smaller quantities. Who can estimate the embellishing and beautifying effects produced by the successful culture of the foregoing splendid varieties of fruit and flower in Cobourg? We regret that we are unable to give secretary Snelgrove's excellent report outlining the work and aim of the Horticultural Society in full, but join with him in hoping that the commendable work of beautifying home and town, which this society inaugurated so successfully in 1897, will be carried on even more systematically in 1898.—Cobourg World.

KINCARDINE.— At the annual meeting of this society in January the election of officers was carried by one motion, after which the annual meeting adjourned, and a meeting of the directors was at once convened, when on motion it was resolved that several ladies be appointed honorary directors of our society, when 14 were selected and the secretary instructed to notify same of their appointment. It was predicted that this addition to our directorate of the ladies insure our society a most successful exhibition of flower plants, etc., sometime during the year of 1898. It is to be hoped that the action of our Board in trying to secure a hearty co-operation of the

ladies in the manner above stated, will not be deemed *ultra vires* of the Statute, by the powers that be. We desire to try the experiment, hoping for success. Our financial statement for 1897, shows that in addition to the nice premiums given to our society last spring by the Ontario Fruit Growers' Association, which were much appreciated. Our directors procured and distributed flowers, plants and bulbs, to our 60 members to the amount of $42.61, and we have a cash balance in the Treasurer's hands from last year's receipts of $24.46 not a bad showing for our first year, our total receipts from members' subscriptions, Legislative grant, County grant, exhibition fees and sale of a few bulbs amounted together to $157.77 ; and our total disbursements, $133.31, leaving a balance in hand of $24.46. Every member receiving the CANADIAN HORTICULTURIST, are highly pleased with same.

JOS. BARKER, *Sec.*

THE ORILLIA HORTICULTURAL SOCIETY.—The annual meeting of the Orillia Horticultural Society was held on Wednesday, the 12th ult. The retiring President, Mr. Tool, occupied the chair. The Secretary-Treasurer made his usual financial report, showing, with a balance of $21.38 from 1896, total receipts of $261.08, of which $131.50 represented membership fees. The total expenditure was $171.65, leaving a balance on hand of $89.43.

Before vacating the chair, Mr. Tool suggested that in view of the satisfactory state of the finances and the great increase of the membership during the last two years, it might be desirable this year to assimilate the methods of the Society somewhat to those which prevailed in many societies throughout the province. It was complained of by many of the members, mostly residents of the town, that beyond the satisfaction of knowing that the Society seemed to be doing good work in its way, they received no value for their annual fee of one dollar each, whilst in some such societies, each member became, by affiliation, a member of the Ontario Fruit Growers' Association, and thereby entitled to a yearly subscription of the HORTICULTURIST, to receive the Association's Annual Report (a publication of much value) and to share in their annual plant distribution, and also a distribution of bulbs, plants, or seeds by the Horticultural Society. Most of the societies which give so much to members do not have exhibitions nor award prizes, so that all their funds are available for such purposes. The Orillia Society is of longer standing than most and began with shows and prizes, and it might not now be well to entirely give up their work in that direction ; but if the annual fee were to be raised to say $1.25 and a membership of two hundred gained, there would probably be funds enough to carry on both methods and it might be well that the society should consider the matter. A good deal of discussion followed Mr. Tool's remarks and it was moved by Messrs. G. H. Clark, and E. B. Alport, that the executive and Board of Directors for 1898 be requested to consider the matters, as suggested by Mr. Tool and that they be fully authorized to deal with them as they may think best. This was carried unanimously, and the meeting was then adjourned.

AN APPLE PUZZLE.

THE following addition to the apparent mystery and the errors of figures is taken from the St. Nicholas Magazine. Perhaps some of our clever Model School or Collegiate Institute scholars can furnish a solution and tell where "the hole in the saucepan" is :—"Once upon a time there were two old men who sat in the market early every morning and sold apples. Each one had thirty apples, and one of the old men sold two for a cent. and the other old man sold three for a cent. In that way the first old man got fifteen cents for his basket of apples, while the other old man received ten cents, so that together they made twenty-five cents each day.

"But one day the old apple-man who sold three for a cent was too sick to go to the market, and he asked his neighbor to take his apples and sell them for him. This the other old man kindly consented to do, and when he got to market with the two baskets of apples he said to himself : 'I will put all the apples in one basket, for it will be easier than picking them out of two baskets.' So he put sixty apples into one basket and said to himself : 'Now, if I sell two apples for one cent, and my old friend sells three for one cent, that is the same thing as selling five apples for two cents ; therefore, I will sell five apples for two cents.'

"When he had sold the sixty apples he found he had only twenty-four cents, which was right, because there are twelve fives in sixty, and twice twelve is twenty-four. But if the other old man had been there, and each had sold his apples separately, they would have received twenty-five cents. Now, how is that explained ?"

Flower Garden and Lawn.

GARDENING IN THE WINDOW.

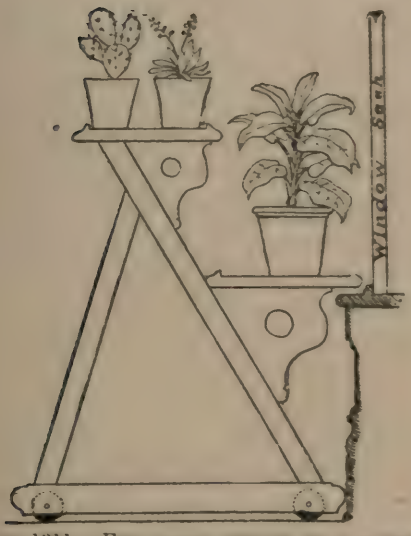


FIG. 1311.—END CROSS SECTION OF A PLANT-STAND ON ROLLERS.

IF an enumeration could be made of persons who cultivate window plants in our land, it would be found that they were far into millions. What Daniel Webster said is true: "The culture of plants seems to be a common field, where every degree of taste and refinement may unite, and find opportunities for their gratification." It will not be inapt therefore, at this time in the winter season, when the culture of house plants gives especial delight, to consider somewhat certain phases of their management. This is especially true inasmuch as many young persons, and others, every year enter upon window gardening for the first time, or else do so on an enlarged scale.

Requiring, as young plants do, both light and warmth, a south window should be the first choice as winter quarters for pot plants. Still there are some other points necessary to be considered. For instance, plants do not succeed as well near a stove or hot air register as they do farther away; should the heater therefore be near the south window it may be necessary to keep the plant-stand elsewhere. An east or west window, the former preferred, should be the next choice. Indeed in the spring and summer either of the latter is somewhat preferable to a south window, because of the stronger sunshine in the last named at a season when neither heat nor excessive sunshine are required.

But what of a north exposure for pot plants? If there is no other window available, one need not be without beautiful plants and flowers even here, if such be properly selected. Here is a list of some good north-window plants: Tulips, hyacinths and other Dutch bulbs, Aspidistra lurida, and its variety with variegated leaves, India rubber plant, gold-spotted farfugium, English ivy, German ivy, (Senecio), Agaves,

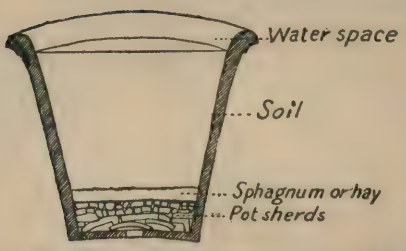


FIG. 1312.—DRAINING A FLOWER POT. FIG. 1313.—FEEDING PLANT BETWEEN RE-POTTING.

palms, especially Latania Borbonica, nephrolepis, pteris and lomaria ferns, lycopodium, Wandering Jew in several varieties, sedum, money-vine, etc.

One thing must not be lost sight of in finding a place for the plant-stand, namely, that the place of best light, that is, near the glass, also is the coldest place in a room. For this reason one must especially guard against frost bites in the winter. A movable plant-stand, mounted on rollers after the plan of Fig. 1311 is very useful for promoting health and bloom in window plants. It should be built so that the lower shelf comes, in the day time, close to the window sash as here shown. Then at night when no light is needed, the stand can be rolled back into the room where it is warmer. As such a stand

FIG. 1314.—TAPPING A PLANT OUT OF A POT.

can be moved up to any window, in some cases the plants could, part of the time, be kept at a south window, and at other times at one less favorable for light, but perhaps more favorable as regards heat.

Undoubtedly the best place for house plants as regards heat is to have them in a room adjoining the one where the stove stands, and with the rooms connected with open doors, so that the warmth will be sufficiently diffused.

The average collection gets along best where there is a night temperature of from forty-five to sixty degrees at the plant-stand. In the day time the place may well be ten or fifteen degrees warmer.

A fertile soil is an important point in house plant culture. It may be called the food question,, and florists will tell you that in order to have fine plants they must receive good food. The best soil is one that is especially prepared some months before it is used. It consists of two parts of thin sods from a meadow, chopped up fine, and mixed with one half the amount of old rotten cow dung. Such soil can usually be bought of the florists for a small price. Insist on getting the best when you buy.

As a pot plant grows, the common way of adding to its food is by repotting into a larger sized pot. How shall we know when it needs repotting? Tap it out of the pot, and if the outside of the ball of earth is pretty well covered with white roots, over about one-fourth or one-third the surface, shift into a pot

about two sizes larger. How to remove a plant from the pot is shown in Fig. 1314. Press one hand firmly against the soil, tap the edge of the inverted pot sharply on some hard surface and out the plant slides. In repotting, place drainage material and soil (see Fig. 1312) in the larger pot, in which set the ball and fill soil into the space around the ball, firming it quite compactly, with the fingers or with a stick.

How to feed plants between repotting is shown in Fig. 1313. It is done by removing the soil about an inch at (*a*) and applying a thin layer (*b*) of bone meal or other concentrated plant food or of animal manure, afterward returning the soil at first removed.

A plant may be well fed and yet injured by drought. The air of our rooms is dry, almost desert-like; that is why such desert plants as the cactuses succeed so well here. One reason why plants in the kitchen usually look so well is because of the greater amount of moisture contained in the atmosphere.

Sometimes plants are overwatered; many tiny things are killed in this way. Still in a well drained pot like that of Fig 1312 such a thing can hardly happen. At the bottom there is a layer of potsherds, the coarser ones carefully laid to overlap somewhat, finishing with the finer bits at the top. On the potsherds is placed a layer of sphagnum or fine hay to keep the soil from passing into and clogging the drainage below. In all plant-potting operations, the work should be finished to have an inch of space below the top of the pot in which to receive water.

A dirty plant or a dirty pot is discreditable to any plant grower. A bath tub should therefore be a part of the plant grower's equipment. Any small tub, with an inclining draining board as shown in Fig. 1315 answers the purpose.

FIG. 1315—THE PLANT BATH TUB.

The dry plants may be stood in the tub until the ball is thoroughly soaked. Sometimes pot plants seem to be well-watered when it is only the surface that is wet, and perhaps the centre is dust dry. Plants in rapid growth need much water. So usually do blooming plants.

To bathe a pot plant incline it on the draining board, and with water in the tub, wash all parts well with a sponge. The task is more delightful as plant after plant comes from the water clean and beautiful.

Insects usually show up first on the weaker subjects, a hint that the way to keep ahead of vermin is to keep the plants healthy by good attention. Take that common pest, the green louse,—it is seldom seen on well plants that receive a weekly sponge bath; it is about the same as regards scale and the mealy bug. That other destructive pest, the minute red spider, which looks like a speck of cayenne pepper, succumbs likewise to washing and other good care.

If one must resort to remedies in any case, by washing plants in an infusion of tobacco and water having the color of tea, plant lice will be killed; while scale and other insects yield readily if washed

in soap suds as warm as the hands can bear.—this will destroy the young that are too minute to be seen with the naked eye. Every such washing should be followed, after an hour, with a douche of clean water.

As regards airing the plants, it is perhaps sufficient to say that what in this respect is healthful for human lungs will suit the plants. But do not forget that the plants cannot take a walk on a pleasant day, hence fresh air should frequently be admitted to them from the window.

In nature all trees and plants have their season of growth and of rest, a principle that must be observed in house plant culture. When therefore any plant, after a period of growth and bloom, shows signs of lessening growth, water also should be somewhat withheld. In a state of rest from growth most kinds can get along with lessened light also, and this we may take advantage of, by putting such kinds as fuchsias, oleanders, hydrangeas and scarlet geraniums in a light cellar, while growth is suspended. Almost without exception it is best as the end of the resting season approaches, say late in winter, to shake the old soil from the roots and re-pot the plants into fresh earth.—Vick's Magazine.

NEW CANNAS.

Dear Sir,—In looking over my notes on the newer Cannas, I am reminded of my promise to you of a report on them. I confess that I am at a loss what to say and do justice to them, and at the same time express fairly my opinion. There are too many varieties before the public, and too few good ones. We in America are too free to condemn the want of distinctiveness among the new continental varieties, but on the other hand are constantly introducing replicas of those long superseded, or with variations so slight as to require critical comparison, in order to distinguish the actual difference.

The greatest lack of value and quality is in the dark foliage section, which I regard as most valuable for contrast in bedding, against a background of lawn or shrubbery. Lack of substance and vitality in the tuber, are strong points against most of the varieties in general use.

The past season was a most trying one, for which due allowance must be made.

While the enormous flowers of the new Italian hybrids are too frail to stand much of our bright sun and high winds, they should certainly be in every collection, for the sake of the few hours they afford striking contrast to the massive foliage peculiar to this section.

Without repeating catalogue detail, I give first choice to Alemannia, America, Baronne de Poilly, Hortense, Barbereau, Mlle Berat.

For second,—Africa, Aphrodite, Asia, Burbank, Beaute Poitevina, Directeur Roelz, Francois Billard, Franz Buchner, Leonard Lille, L. P. Lehalleur, Madagascar, Paul Lorenz, Roi des Rouges, Souv de Jeanne Chaure, Souv de Mme Crozy.

Instead of noting the third, in which we can feel little interest, the following older varieties are most desirable :—A. Bouvier, Austria, Comte de Bouchaud, Chicago, Columbia, Etendard, Eldorado, Furst Bismarck, F. Vaughan, F. L. Harris, Italia, Mme Crozy, Mme A. Bouiver, Mme Montefiore, Papa Canna, P. J.

Berckmans, Queen Charlotte, Souv de Ant. Crozy.

The many and valuable varieties of American origin, I leave to the critic who has tested them all, with the warning to be justly severe. These are the offspring of continental hybrids, and we may always take it for granted that specialists "keep something up their sleeve," and can "go one better" than the best; also that improvement by selection is not in leaps and bounds, but steadily—yet surely—forward.

Simcoe. H. H. GROFF.

UTILIZING PIAZZAS FOR PLANTS IN WINTER.

THOUSANDS of farm houses have piazzas upon the sunny side that might be utilized for both pleasure and profit in the winter. Such utilization, moreover, would entail no great expense outside of the small amount of home carpentering that would be required. There are two or three points to be considered when making a plant room of a piazza. First, as to floors. The ordinary piazza has no tight underpinning to keep out the cold. Usually it has only lattice work, while the floor, also, is generally more or less open. It would be no great trouble to lay a new matched floor over the few feet of space to be occupied by the plant room. Then cover the lattice work around the base of the piazza with heavy, resin-sized, or tarred building paper, tacking it tightly, and bank with evergreen brush. Now, as to the outside walls. The greater part must, of course, be of glass, but it is not advisable to have the sash extend to the floor. From the piazza rail down let the wall be of matched boarding. Along the front this could be screwed to the inside of the rail. Sash to fit any opening can now be bought very cheap. It is desirable that communication with this plant room be from a living room rather than by a hall door, so it may be found desirable to cut down a window and make a door of it. This will obviate the necessity of having a door in the outside, temporary partitions.

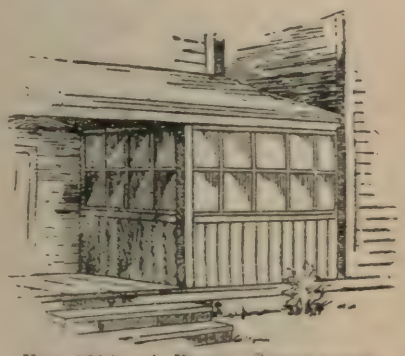


FIG. 1316.—A PIAZZA GREENHOUSE.

The heating of such a plant room can be done in a number of ways, but the simplest and most satisfactory for the average farmhouse will probably be by the use of an oil stove. These little sitting-room oil-heaters have been so improved and made so reasonable in price, that they will be found wonderfully convenient for just such use as this. Care should be taken, however, to get a make in which the flame will not "crawl" up and smoke, if left by itself. The accompanying illustration gives a suggestion as to the making of a plant-room upon a piazza. Of course, piazzas differ in shape, but the same principle of treatment will apply to nearly all cases. Make all as tight as possible, then an oil-stove will give sufficient heat to keep the plants in health. —Amer. Agriculturist.

PRIMULA OBCONICA.

FIG. 1317.—PRIMULA OBCONICA.

ONE of the most beautiful and reliable of winter-blooming house-plants is the new large-flowered fringed variety of Primula obconica, a plant and flower cluster of which are shown in the engraving. The foliage is neat and handsome, and the numerous clusters of exquisite flowers are produced upon long stems throughout the winter and spring months. A four-inch pot will accommodate a fine specimen, and half a dozen such grouped together in a window will make a mass of delicate bloom that will elicit unbounded admiration from every person of refined taste who may enjoy the sight.

The Primula obconica was introduced from China some years ago, but has not as yet become popular, owing probably to the fact that it has never been largely advertised. As a winter-blooming plant it is certainly as valuable as the well-known and justly popular Chinese Primrose. The enlarged and improved flowers of the plant as now grown, make it much more desirable than the typical species, and as propagation is readily effected from seeds there is no reason why anyone should fail to grow it. It is of the simplest culture, requiring only the treatment of the old Chinese species. This plant should be placed upon your list for trial from seeds the coming summer.—Parks F. Mag.

BEAUTIFYING OUR HOMES.

AMONG the important matters that Horticultural Societies should be interested in is one of beautifying our homes and lawns. It is a sad mistake for one to suppose that all he needs to do is to plant and his yard will be beautiful. It is another great error to think that while the trees are small they are not beautiful. A lover of trees can and should enjoy their growth, see beauty in every budding branch, in every falling leaf, in every naked twig, and in every bud or leaf or blossom or fruit.

In planting our yards or lawns or groves, let us follow these few simple rules, and we shall not go far astray, but they shall give a pleasing effect to the eye. 1. The first beauty of a lawn is a fine grass plot. Have a beautiful, clean, closely shaven, velvety grass all over the yard. 2. Plant abundantly, plant small trees, plant hardy varieties. 3. Plant in groups, shrubs in one, deciduous trees in another, evergreens in another, herbaceous plants in another; but do not mix them indiscriminately. 4. Always leave open spaces or vistas, so that you can have a fine grass plot, as well as trees, shrubs and vines. The contrast of a beautiful, open, green sward gives untold added beauty to the trees or shrubs, that they wholly lose if planted indiscriminately. 5. Care and attention; a good mulching to all newly planted trees is necessary; pruning them just enough to keep them in shape is all that is needed. Never prune an evergreen up from the ground; keep everything in bush form that can be so kept by proper pruning. Keep as nearly the natural growth as the conditions will permit with neatness. Cut out the trees, shrubs or plants as fast as they interfere with one another. Never let one tree or shrub spoil another because they are too thick. Following these rules, we need not fear but our yards will be beautiful.—L. A. GOODMAN, Missouri.

THE CATALPA.—(C. syringæ folia.—This beautiful tree is very seldom seen, few indeed except professional gardeners having any acquaintance with it, yet a more handsome object whether in regard to its foliage or when in flower, it would be hard to find. The leaves of the Catalpa are large, heart-shaped, and of a peculiar pale green hue, which at once attracts attention. The flowers, which are produced early in August, are very handsome, and this season they have been borne in great profusion. In shape each resembles a small Gloxinia, but they are white, slightly shaded with purple, and spotted in the throat with purple and orange. The tree does not flower freely until it has attained a considerable size, 18 ft. or 20 ft., but it is of very rapid growth in the early stages, soon forms a large, handsome head, and then increases more slowly. In the autumn the foliage becomes of a beautiful golden yellow color before it falls, which contrasts well with darker leafage behind and around it. The tree is, unfortunately, not thoroughly hardy, and except in sheltered spots should only be planted in the Southern counties. It is increased by seeds, which are freely produced in warm summer.

The Canadian Horticulturist

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

Notes and Comments.

CONSERVATORY OPENINGS.—Through the kindness of the proprietors, a large number of private Conservatories will be open to members of the Montreal Horticultural Society on the Saturdays of February and March. This is an example worthy of imitation in other cities. Why not also include some private pleasure grounds?

FRUIT from the United States is not allowed to be landed in Germany. This restriction is to prevent the introduction of the San José scale. So far, Canadian fruit is not barred, and will not be if our orchards continue healthy; but once permit this scale to become commonly distributed, and there will be an end to our profits in fruit growing. This emphasizes the importance of prohibiting the importation of U. S. nursery stock and fruit—lest Germany shut her gates against us also.

A SAN JOSE scale Act has been passed by the U. S. Congress, providing for inspection of nursery stock, and making it illegal for transportation companies to carry, or for persons to export, such stock without being first subjected to proper inspection. This does not satisfy Canadian fruit growers, because such inspection is not a complete guarantee against infestation, and besides we note that the Act does not come into force until the 30th of June, next, by which time tens of thousands of dollars' worth of U. S. nursery stock might be brought into Canada, much of it more or less infested.

We hope the Dominion will take prompt and vigorous measures in dealing with this pest.

CANADIAN HORTICULTURAL SOCIETY is the title of a new organization completed in Toronto on the 10th February.

Mr. Wm. Gammage, of London, was elected President, and Mr. Hugh McLean, of St. Thomas, Secretary. This society is composed of professional florists, and will no doubt do much service in the interests of the trade. This will not in the least trespass upon our work, which is wholly in the interests of amateurs. There is also a possibility of this organization publishing a trade Journal for florists.

HARRAHAN'S AUTOMATIC REFRIGERATOR CAR.—We are in receipt of a letter from Mr. F. R. Latchford, of Ottawa, in which he calls attention to the failure of our export shipments of fruit last year, owing to the poor system of refrigeration in use both on steam cars and steamboats. Mr. Harrahan's system seems to be excellent and is economical, inasmuch as the ice is only needed at the middle, a great saving in both maintenance and operation.

THE BURBANK plum is recommended as the most valuable for general cultivation, by Mr. S. D. Willard, of Geneva, N. Y. He says it is a fairly good plum and gives best crops. Last season he shipped 2,500 ten pound baskets of them to three different markets, and they netted him from 15c. to 25c. each, which was good for the season. He labelled them "Best canning plum." The tree is inclined to overload, but the fruit must be thinned.

THE CUT OF THE FOREST BELT, on p. 51, is from a photograph taken by Mr. Shutt, of the Central Experimental Farm, to illustrate an article by Mr. W. P. Macam, which appeared in the Farmers' Institute Report.

FIG. 1318.—TRIUMPH PEACH.

THE TRIUMPH peach is being widely advertised, but we have not yet tested it, though we hope for fruit this coming season. It originated in Georgia, and is claimed to be a good yellow freestone, which is of about same season as the Alexander. The flesh is yellow, quality fine, and a freestone.

THE MANITOBA HORTICULTURAL SOCIETY is the name of the newly organized Society in that Province, which holds its Annual Meeting in the City Hall, Winnipeg, on Friday, February 18th. It exists for the same effect as our own Association, the circular issued stating that "The Manitoba Horticultural Society exists for the purpose of advancing the interests of Horticulture in the Departments of Flower growing, Fruit growing, and Tree growing, throughout the region between Lake Superior and the Rocky Mountains. It aims at discovering the kind of plants, and methods of cultivation most suited to the soil, the climate, and the peculiar circumstances of this country."

Question Drawer.

Black Currants Do Not Bear.

978. SIR,—Could you kindly give me a reason why Black Currants are such a poor crop here, large bushes not giving over one quart each, and often not over a cupful although they are well cultivated and manured, and any old wood cut out but still there is plenty of two and three year old wood left to bear, as I also thin out all weak one year old shoots. As to kinds, the Black Naples is as good as any although Lee's Prolific had a very fair crop last year, but the one you sent out, one of Sanderson's seedlings has bourne well and is of great promise.

A. J. COLLIN.

The experience of Mr. Collins is but a repetition of that of each of us, who has tried growing black currants for profit. Can any one tell how to make them productive?

Rockport Bigarreau.

979. SIR,—We have a large cherry tree of Rockport Bigarreau that we gathered 150 quarts off last season, but from some cause the fruit did not ripen properly, and nearly the whole of them begun to rot badly so that really we had none that was good. The tree is shaded from the morning sun, if the whole of them had ripened all right we should have had over 200 quarts, generally they are a fine large meaty cherry, once before there was quite a lot rotted on the same tree, other trees of the same kind were very fine. We were thinking it would be a good plan to give this tree several sprayings next spring and summer with copper sulphate and Bordeaux mixture. Would you advise us to do so, and do you think it would save the fruit.

WALTER HICK, *Goderich.*

Probably no variety of cherry is so subject to rot as Rockport. We have had it in bearing at Maplehurst for twenty-five years, and though it loads tremendously, not one-half the fruit ever ripens. The rot comes on just before maturity, and rapidly spreads throughout the tree, especially if favored by showery weather. Spraying with Bordeaux mixture about three times, once before blooming, once after, and again when the fruit is half grown, should control this rot.

Planting An Orchard.

980. SIR,—I intend setting an orchard of 300 apple trees, and am at a loss to know the best varieties. As you are in the fruit business, please give me your opinion, naming six good kinds for the English market. many speak high of the Ontario.

R. D. PICKERING.

Varieties that succeed in the Niagara peninsula might not succeed well north of lake Ontario, yet speaking generally, the following six varieties may be planted with confidence, viz : Duchess, Gravenstein, Blenheim, Wealthy, Ontario and Ben Davis.

Canning vs Evaporating Factory.

981. SIR,—Please say if you think there is a good chance of making a success of our evaporating factory on the co-operative plan ; or would an evaporator be more likely to succeed ?

E. E. H. OAKVILLE.

A first class canning factory needs a large investment of capital, and must be most carefully managed to avoid a financial failure ; but an evaporator requires much less capital, and is therefore more certain of proving a safe investment.

Ground Cherries.

982. SIR,—Kindly furnish me with such information you may have on hand regarding the culture and different kinds of ground cherries and prices usually obtained per lb. or bushel and were the best market is for the same. Can you furnish the seeds ? If not where can they be obtained and what is the price per lb.

E. S. BROWN, *Parma, Ont.*

Reply by Prof. Taft, Michigan Agricultural College.

The ground cherry requires about the same care as the tomato. The seed may be sown in a hotbed, or in a box in the house, and transplanted when danger of frost is over ; or may be sown

at once in the open ground, but in ordinary seasons the extra trouble of transplanting will be repaid. The rows should be three feet apart and the plants 18 to 24 inches apart. I have never known of their being grown for market and can give no prices. The seed is sold by seedsmen at about 30 cents per ounce. Any of the large dealers can supply it.

World's Fair Medals.

983. SIR,—Did you ever hear of any one in the county of Huron, or any other county in the Dominion, who received his award for fruits exhibited at the Columbian Exposition. If any one has received it, I would like to know who it is. I sent quinces and Whitesmith gooseberries, and so did other persons from this section, but I have not heard of any one who received his award.

JESSE GRUMMETT, *Nile, Ont.*

A large number of awards were made to the exhibits sent from Ontario, but it appears that they were afterwards very much cut down by some committee of revision. Ontario had taken so many more fruit awards than any State in the Union, that it did not seem pleasant to the committee to make the awards as first decided upon by the judges. We do not see any other explanation of this matter. A certain number of medals have been sent on and distributed, but not nearly the number that was at first expected.

English Cherry.

984. SIR,—I have an English cherry which last year had an abundance of blossom and green fruit but very little of it ripened; it was situated on a high bank of sand, and had not much cultivation before. Please tell me what to do with it. It is about 20 years old.

ENQUIRER, *Port Colborne,*

Enquirer does not state whether the cherry rot (*Monilia*) is the cause of the fruit not ripening, nor the variety of English cherry. We judge, however, the rot must be the cause, and would suggest thorough spraying with Bordeaux mixture, first before the blossoms open, second after the fruit has formed, and third about two weeks later.

Barrel Strawberry Culture.

985. SIR,—In American Gardening of Feb. 5th is an article on barrel Strawberry Culture practised by J. P. Ohmer of Dayton, Ohio, accompanied by a photograph of Mr. Ohmer and his barrel. Many of your subscribers would no doubt be pleased to have in your valuable Journal, directions for this novel method of culture, and even if we, especially amateurs like myself, could not expect such favorable results as Mr. Ohmer claimes to have had, yet the novelty of the thing might induce us to try a barrel or two

P. BARCLAY, *Petrolia, Ont.*

FIG. 1319.—THE BARREL STRAWBERRY.

For the benefit of any readers who may want to try this novel method of growing strawberries, we give a reduced copy of the cut in American Gardening, together with letter from F. W. Ritter, of Dayton, O., regarding it:

"I am sending a photograph of strawberries growing in a barrel, with the grower, J. P. Ohmer, of this city, standing by its side. The picture shows the barrel standing on a platform wagon as Mr. Ohmer exhibited it on the streets of Dayton.

"While this method of growing strawberries has been described in the agricultural papers of the country a number of times, Mr. Ohmer is the only one that I know of to demonstrate the practicability of the method, he growing last season 60 barrels. Mr. Ohmer is very enthusiastic on the subject and claims that one can grow 1,250 bushels of strawberries per acre and figures it in this way: By placing the barrels four feet from center to center, one acre will hold 2,500 barrels and if each barrel will produce one half bushel of berries, as Mr. Ohmer's did last season, the acre would yield 1,250 bushels of berries, Mr. Ohmer says you have no weeds to fight and do not have to break your back in picking them, besides they require no mulching to keep the fruit free from sand. All you need is plenty of water and the crop is assured; he told the ladies of our Horticultural Society at one of its meetings that they could grow strawberries in their parlors by this method."

We have written Mr. Ritter for further particulars, but can see nothing difficult about planting in this way. The holes would be first bored, and the plants set as the barrel was being filled with rich soil. There would be three very important points to consider:—1st, the soil—which should be very rich with compost, and especially with nitrates; 2nd, the variety, some such kind as Clyde or Bubach would probably do well; and 3rd, there must be a plentiful supply of water. In a town garden where a hydrant is convenient and ground limited in extent, this would be a capital way of growing a table supply of strawberries.

Rose Thrips.

986. SIR,—I was much troubled late last summer with thrip on roses, both hybrids and climbers, and though I have used both tobacco juice and fir tree oil, I could not reduce them to submission. What other remedy had I best apply?

R. N. LIGHT, *Kingston.*

Reply by Prof. Hutt.

Thrips, when infesting plants out-of-doors, are by no means easy to contend with. Prof. Fletcher, Ottawa, in one of his reports, says that the remedy "which gives the most promise of success is a weak kerosene emulsion, in the proportion of one of kerosene to thirty of water, to be applied at the time when the young bugs have hatched.

Lilium Speciosum.

987. SIR,—Last spring I received a bulb of L. speciosum roseum from your Association, and buried it in a large pot, in October, putting it in a dark cellar for a month or two; but it never came up. I am much disappointed and would like to know the cause.

R. H. LIGHT, *Kingston.*

Reply by H. L. Hutt, O. A. C., Guelph.

It is altogether probable that the failure of the lily bulb was due to the bulb itself and not to the treatment given it. Many have experienced just such failures with their lily bulbs this year. The nature of the disease causing the trouble has not yet been definitely determined. One of our students has been working for some time on a similar trouble on other bulbs, and it is hoped that before long something more definite may be ascertained.

Azalea Indica.

Replies to Questions.—972.

It is doubtful if Azaleas can be grown successfully as house plants, and if Lindsay does succeed, the detail would be a valuable communication to our Journal.

There should be no difficulty in blooming the plants just purchased, with buds developed by expert treatment.

On arrival, and before potting, the root-ball should be thoroughly soaked with water. The pot used must be about one inch more in diameter than the ball. The soil may be any well rotted sod loam, and if prepared in the usual way with manure, no harm will be done. The plant should be placed

in a cool greenhouse, or room, near the glass (the air of the living room of a dwelling is too hot and dry), and the foliage sprayed daily until the buds burst.

After blooming, pick off the seed-pods, and when danger of freezing is past, plunge the pot in full exposure to the sun, with coal ashes beneath to prevent the work of earth-worms. Pinch back straggling growths to keep the head symmetrical, and spray freely every day during hot dry weather, with a decided under-cut.

The above treatment should place the plant in original export condition, and if wintered in a cool moist atmosphere, well aired, and sprayed on bright days, the results of the first season may be repeated; after which treat as before, transferring to a larger pot if needed.

H. H. GROFF.

✱ Open Letters. ✱

Nelumbium Luteum.

SIR,—In mentioning the *Nelumbium luteum* in November number, a very important habitat, viz, shores of Lake Erie, Province of Ontario, was omitted. *N. speciosum* is naturalized in ponds in New Jersey.

J. M. D., *Hamilton.*

A Glimpse of Spring.

SIR,—On the 11th day of February, I picked my first Snowdrops. What wonderful little flowers, for, about the 11th of January, the ground was bare and not a sign of growth; then came eight inches of snow, and under that mantle the little plants first made a growth of leaves about one inch in height, and then a little tender green stem starts up, carrying with it a small drooping bud, and as it forces its way through the snow the bud increases in size, till the stem is about three inches long; by that time the bud is as white as the snow, something in the shape of a small hazel nut. In a short time after they were placed in water, each flower burst open, perfect emblems of modesty and purity. Dear readers, if you have no Snowdrops in your gardens, do not let next fall go by without planting out a few dozen bulbs.

C. J. F., *South London.*

The Florida Velvet Bean.

SIR,—I send you herewith sample of the new Florida product—the wonderful Velvet Bean. Up to two years ago it was grown here in a limited way, mainly as a trellis shade; but afterwards, it being discovered that it was invaluable for all kinds of stock as a forage, and a phenomenal fertilizer for Orange and other fruit trees, and for the soil as well, it has been grown in a larger way since that.

There is nothing yet discovered that is all in all, so valuable a crop as this, for farmers to raise. It being an air plant it will do well in most any kind of soil, in any of the States, north or south, that will grow corn, and no fertilizing is necessary. The forage—the foliage and vine—coming from this bean is a marvel and a wonder.

To plant in rows four feet apart will produce a solid mass of vine and foliage to the depth of fifteen to twenty inches, covering the entire surface of the ground.

Beside the vine being a valuable fertilizer, forage, shade and mulch, you will ask, Is it also prolific in fruit? I answer, Yes, emphatically so. From the hill the vine runs out in all directions like the watermelon, ten to twenty feet. It begins to fruit at the hill like the raisin grape, thence along the entire length of the vines at intervals of ten to twenty inches, pods in clusters of from ten to twenty appear. Therefore the fruitage must be immense.

From twenty to thirty bushels of shelled beans is a modest estimate, from an acre of ground, average crop. I speak from experience, as I have just harvested nineteen acres of as fine a crop as ever grew.

Plant early in spring in rows four feet apart, or drill in furrow, and cover with plow, as you like. From three to five beans to the hill is the right amount of seed. If drill and cover with third or fourth furrow, put in sixteen quarts to the acre. Cultivate and keep clean until vine begins to fill the

row, then lay for the season. In the fall when bean is ripe, pick it. Then turn mass of leaf and vine under for fertilizer. If you want to use any of the forage green, cut up at hill and carry out to stock.

If planted in orange grove or orchard, keep five feet or more away from trees, as the vine is a great climber and will cause you bother. Four to five pecks of perfect seed will plant four acres. If drill, better put in at least sixteen quarts to the acre.

The beans ground up, hulls and all, make a fine fertilizer for pineapples, orange and other fruit trees, as well as for all vegetable growth. Stock of all kinds like it, as well as the green forage early in the season, and all do specially well on it. There is nothing on the farm that does not eat this bean, from horse to chicken, with greediness. The dry bean is good for the table.

The question is repeatedly asked em, if this bean will do well in the northern States? I answer by saying, there is no earthly reason why it will not, as it is not tropical, and will do well wherever corn will grow.

After having made a thorough test of it, I have come to the conclusion that, as a fertilizer, forage, feed, mulch, shade, a prolific bearer of fruit, an up-builder of the soil, this bean has no rival.

The analysis of the Velvet Bean shows:—Nitrogen 54 per cent., crude protein 19, fat 6, fibre 8 and moisture 12.

Any further information your readers may want, if they will send stamp, I will cheerfully reply.

CAPT. E. A. WILSON,
Orlando, Fla

LADY DOROTHEA.*

THEODORE H. RAND, D.C.L.

I

DAUGHTER of earth and sky,
They said was Rhea;
Child of the sunset thou,
Sweet Dorothea—
Rose that tells of a mother's devotion.
Canada's rose from Ocean to Ocean!

II.

Under far misty skies
A Lady kist
A babe, the fairest, best,
E'er laid I wist—
On beating breast—
A skyey, glad surprise!

Years wove their web of care,
Great duties came
And other wistful ones
Askt a love name;
While brighter cups
Shone through our northern air.

And as some richer day
Its lustre shed
Regret would bud and blow,
When day was dead—
Bright afterglow
Of her that passed away.

III

Queen City of the West,
Not all unsought
Viceroy and Lady came,
And heard untaught
And true acclaim—
What loyal hearts exprest.

Here a new rose was born.
The gardener said
Lady, my "Sunset" rose
Blossoms in red:
See! fair it glows,
A flake of kindled morn!

A right name give to it,
As balmy fell
Soft sleep from heaven that night,
Quick memory's cell
Flashed into sight,
Upon the dark alit.

The child of other years—
So pure, so fair,
With dawn-like roses wreathed
Within her hair!
As life she breathed—
The Lady woke in tears.

IV

Than maid of Cherronea
My child was fairer
(Gardener she said at even)—
Our daughter shares
Long since of heaven!
Name? "Lady Dorothea."

V.

Daughter of earth and sky,
They said, was Rhea:
Child of the sunset thou,
Sweet Dorothea—
Rose that tells of a mother's devotion—
Queen, Mother-love, from Ocean to Ocean!

*The name given Mr. Dunlop's new rose by Lady Aberdeen.

FLOWERS IN MARCH.

THE crocus and the primrose bloom
In amber's varying dyes;
And snow drops aid to chase the gloom,
Inspir'd by lowering skies.

So gems—with answering hues—adorn
The necks of ladies fair;
The topaz, and the pearl, there worn,
Do with those flow'rs compare.

The amethyst and aconite
Alike their tints display;
The violets too, as sapphires bright,
Their purple tribute pay.

Narcissus next appears, forsooth,
In jealous yellow clad;
Because he lov'd himself, poor youth;
And, cross'd in love, grew mad.

Ere long, rose, (oh, beauteous flower!)
Its fragrance will exhale;
And, after ev'ry soft'ning shower,
Fresh perfume ev'ry gale.

The infant buds, as emeralds, shine;
But soon, a crimson dye,
The jagged calyx rich will line,
And seem like rubies nigh.

That semblance mark luxuriant earth,
In precious boons bestows,
Twixt radiant gems that lie beneath,
And flow'rs the surface shows!

'Tis thus the Delia's matchless charms,
Which joy around impart;
Within her smiles each floweret blooms;
Each gem shines in her heart.

I. KINGDOM.

March, 1814.

Our Book Table.

PARK AND OUT-DOOR ASSOCIATION. First Report, Louisville, Kentucky, 1897.

We have just received a copy of this Report from Mr. W. H. Manning, of Boston. The report covers about 100 pages, not only showing the excellent work of the Association, but also containing many valuable papers. As an example, we quote from Mr. Manning's paper on Park Designs and Park Planting:

Plantations upon the public streets, about recreation grounds, or at points where large crowds will congregate, should be made up of plants with uninteresting flowers and a vigorous constitution, tough branches or prickly stems, so that they will repel rough usage and recover quickly from an injury; while those standing close to pleasure walks, terraces, windows, and about buildings, where they will be under inspection at all times, should be made up of varieties having foliage and flowers and stems that are attractive at all seasons; whereas plants that are to form a part of a landscape to be viewed at a distance should be selected on account of the effect of light and shade that they will produce. Similar considerations will prevail in working out the details of all plantations.

It is generally coming to be realized that native plants, especially those having a vigorous growth and healthy foliage, should predominate in all permanent out-of-door plantations, and that with these the exotics can be used to give variety, but in such a manner that no serious injury to the appearance of the plantation will result from diseases to which they are more subject as a class than natives.

Primarily plants are used by a landscape designer as a painter uses his pigments, to secure certain landscape effects. He does not select a plant for a position because it is rare, but because it gives just the shade of color, texture, or outline to complete the ideal picture he has formed in his mind.

CATALOGUES.

SEED ANNUAL, 1898, A. W. Livingston's Sons, Columbus, Ohio.

THE ash-leaved maple (Acer negundo), a herald of spring, with its beautiful green foliage, and its rapid growth, would be an excellent street tree, were it not for the bag-worm and web-cater pillar being so found of it. It should be skilfully pruned to keep it in good health.—Mass. Hor. Society.

SEED SOWING.

THE usual failure in getting seeds to grow is from sowing them too deeply in the earth. If it were possible to keep the seeds dark and moist, they would be all the better from being sown absolutely on the surface. Every one familiar with forest growth must have noticed how forest tree seeds, which simply fall to the earth and are covered by the few leaves or the remains of grasses, germinate without difficulty. In cherry trees, especially, the stones, which have fallen from the tree, lying on the surface all winter, sprout and grow rapidly when spring time comes, and yet cherry seeds from the same tree, collected by the seed sower, sown in the way in which seeds are usually sown, frequently fail to grow. In order to have seeds as near the surface as possible, and yet protected against drying up, the great prince of American practical gardeners,—the late Peter Henderson,—recommended for planting vegetable seeds, that the garden line should first be stretched along in the direction where the vegetables were to grow, sprinkle the seeds along the line entirely on the surface, and then simply tramp them in the ground along the line. In this way no garden seed ever failed to grow if it were good, and garden seeds are generally good, for it has been found that even old seed, if guarded against extreme heat or moisture, will continue to preserve its vital power for a definite period. Still every purchaser desires to get seed as fresh as possible. If the suggestions given are borne in mind, there will be very seldom complaints about the failure of garden seeds to grow.—Meehans' Monthly.

TOMATO GROWING.—A writer in American Gardening says :—Much of the success with the Tomato plants depends upon their not getting stunted in the hotbed or greenhouse before transplanting. Too low a temperature, too scanty supply of water or getting rootbound may do this. If this happens the plants are later in coming to bearing, and also there is a considerable difference in the total yield. Too high a temperature is not as bad unless it scorches the leaves badly, but it makes the plants long legged and liable to be broken down by the wind or by their weight of fruit. If the plants cannot be set into the open ground before they begin to get rootbound take up a part of them and put them in boxes down cellar, where they will keep a week or more very well, and that will give room for the others to grow.

WINTER CARE OF BULBS.—Where cannas, dahlias, gladioli and other summer flowering bulbs are stored in ordinary cellars they require careful examination from time to time. If the storage place is dry and warm the bulbs have to be sprinkled with lukewarm water when required to prevent their shriveling; if it is damp and cool there is danger of their rotting; and in a damp and warm place they are apt to sprout too soon. As in most cellars the temperature varies considerably in various parts it is generally not difficult to change the bulbs to a more favorable position if so desired.

CLUMP OF HERBACEOUS PÆONIES.

THE
CANADIAN HORTICULTURIST.

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THE PEONY.

SINCE we are sending out roots of herbaceous peonies as a part of our plant distribution for '98, we thought it would be interesting to use as a frontispiece a photograph of a fine clump of these plants in full bloom at the Central Experimental Farm, Ottawa. The cut is kindly furnished us by Dr. Saunders, from his report for 1896, in which he writes as follows:—The peony is an old garden favorite which has of late years grown very much in public esteem on account of the large number of beautiful new varieties which have been produced. The herbaceous sorts are best known and have a first claim on our attention. These consist of several distinct species, the flowers of which when unimproved, are single or semi double, but by cultivation, selection and cross-fertilizing, a large number of very fine double forms have been obtained. The Chinese peony *P. albiflora*, a native of China and Siberia has been very much used by those who have worked on the improvement of the peony. This flower was first introduced to cultivation about 1780, and was brought prominently into notice nearly a century ago; a number of the first new forms having been described in the Transactions of the Linnæan Society in 1817. After this peonies grew rapidly in favor, and from 1835 to 1842 choice examples of the newly introduced sorts of that period were sold at very high figures ranging from £2 to £10 sterling each. In subsequent years, they were favored with less public attention, but the interest has revived in them very much during the past ten years, and in the catalogues of some of the larger growers of these plants, there are now offered as many as 500 named sorts all said to be distinct varieties, varying in color from pure white through different

shades of lilac, pink, rose, carmine, violet, purple, red and crimson, and many of them are rose scented.

The herbaceous peonies send up stout flower stems every year, which die down at the close of the season. The roots are thick fleshy and much branched and if left undisturbed for several years, large clumps form, producing very effective masses of bloom Peonies delight in a rich, deep soil, well manured, and the roots should be planted with their crowns or buds 3 or 4 inches below the surface. A top-dressing of rotted manure in the summer is also very useful by affording nutriment and preventing evaporation, and a similar covering in winter is desirable for protection.

Another class of peonies is known as tree peonies. These are varieties of a shrubby peony from China, *P. Moutan* and do not die to the ground each year as the herbaceous sorts do. These have been grown with fair success at the farm at Ottawa, when the ground has been well covered with snow during the severe weather in winter, but if exposed to low temperatures when the ground is bare they suffer more or less from winter killing. The tree peonies are more expensive than the herbaceous sorts and are not nearly so satisfactory for general cultivation.

OUTDOOR FLOWERS IN FEBRUARY IN B. C.

FIG. 1320.—PROVINCIAL PARLIAMENT BUILDINGS, VICTORIA, B. C.

OUR readers will be interested in the following letter from Mr. J. R. Anderson, Deputy Minister of Agriculture for British Columbia, which proves so clearly what a mild climate that Province has, when so many varieties of flowers are in bloom in February. The new Parliament Buildings of Victoria, are also an evidence of the rapid development of the country.

On the occasion of the ceremonies in

FIG. 1321.—A TABLE OF FLOWERS GROWN IN THE OPEN AIR IN B.C.

connection with the opening of these Provincial Buildings at Victoria, on the 10th of February, the Natural History Society undertook the collection, as an object lesson, of such open air spring flowers as were then obtainable. The result was, that a table was arranged in the botanical room of the Department of Agriculture, in which was exhibited bunches of flower of the following varieties :—

Daphne, wallflower, primrose, violet, laurestinus, polyanthus, crocus, stock, scylla, pansy, snowdrops, anemone, corse, willow, jasmine, Monkshood, or Aconite, Japanese berries, ivy.

Under separate cover I send a photo of the table and a cut of the buildings.

FERTILIZERS FOR STRAWBERRIES.—Nitrate of soda is a valuable fertilizer for strawberries and raspberries, and should be applied with powdered phosphate of lime.

This application to strawberries will sometimes treble the yield. The berries are larger in size, handsomer in color, more solid and finer in flavor. Ordinary manure will not produce such results, as it is not converted into plant food until after the demand of the fruit.

Nitrate of soda and powdered phosphate of lime are assimilated by the plant at once, and appropriated at a cost of less than ten dollars per acre, using four hundred pounds of the mixture which contains the three ingredients considered necessary to use for feeding plants; nitrogen, phosphoric acid and an alkali.

SOME TREES AND SHRUBS IN NIAGARA FALLS PARK.

MR. R. CAMERON, the gardener, forwards us some photographs of trees and shrubs in the Park, taken by the Secretary of the Niagara Falls Horticultural Society, some of which will be of interest to our readers.

FIG. 1322.—A VIEW OF NIAGARA GLEN.

Fig. 1322 is a view of Niagara Glen, a most charming spot, with its many attractions in rapids, trees, shrubs and wild flowers. One may here find immense rocks, covered with mosses of many varieties, and rare and beautiful ferns, such as *Asplenium trichemanes*, or *Camptosurus rhizophyllus*, in thousands covering the rocks, also the *Pellaea atropurpurea* (Cliff Brake), and *Asplenium angustifolium*, and many others.

Fig. 1323 shows Exochorda grandiflora, from North China, a strong growing, finely shaped shrub, bearing in May a great profusion of lovely pure white flowers; a very choice shrub, but difficult of propagation, and always scarce. It should be in every collection of shrubs. This specimen is four years planted, and has given great sat-

Fig. 1323.—Exochorda Grandiflora, from North China.

Fig. 1324.—Yucca Filamentosa or Spanish Bayonet.

isfaction. It is quite hardy here and should succeed even further north.

Fig. 1324 shows a fine plant of Yucca filamentosa, or Spanish Bayonet. There are about one hundred of these in the Park, and last year they made a grand display when in bloom, and they were the admiration of a number of visitors. The flower spikes are about six feet high, and I question if the like were ever before grown in Canada.

Fig. 1325 shows one of the herbaceous plants that should be in every garden. There could not be anything better. It is quite hardy and will grow in any good soil, but it is better of a little coarse barnyard manure about the roots during the winter. The plant shown is ten years planted, and had last spring (1897) one hundred and fifty flowers and buds on it at one time. The name of it is Pæonia latipetala (Tree Peony.)

FIG. 1325.—PŒONIA LATIPETALA, TREE PEONY.

THE Plane tree (Platanus orientalis) in Washington is one of the best all-round street trees. They are greatly improved when severely trimmed; even the hollow-stemmed old specimens on Pennsylvania avenue, when so treated, were greatly renovated in appearance.—Rept. Mass., Hor. Society.

WHITESMITH GOOSEBERRIES.

SIR,—An article from T. Beall, of Lindsay, in October number anent large and small Whitesmith goosberries, requires a few comments. I wish to inform Mr. Beall that the sample sent by me was not the largest I had as the branch contained large and small, and taking productiveness into account it was a sample not easy to beat. Mr. Beall ought to have born in mind that his sample was selected berries taken from a gallon. However I congratulate him on his large gooseberries and hope he will long produce more of them. I grow every season specimens weighing more than the weight given by him which is nearly one half ounce each. The largest I ever grew were this season's product, but the long continued rains burst all the largest ones. I have not any of the English prize-taking varieties, they being worthless except for that purpose; some of the berries are of enormous size and such as the London Red weigh 33 pennyweights or about one and one half ounces. We cannot reach such dimensions as these with our present marketable varieties.

I fully endorse the proposition by Mr. Beall for parties in different sections to send samples for you to test and report in the journal; it would be a good stimulant to produce the best of a much relished fruit but the test I think ought to be of different varieties. I am sure the growers here will court competition as we flatter ourselves we can grow gooseberries equal to any part in Ontario, we can grow them also without mildew. Ever since I discovered—ten or twelve years ago—how to treat them, I did not lose over two quarts up to this season which was the worst I ever experienced, every variety that would mildew did so; even the Downing had to submit. However I have several seedlings that were mildew proof and which I consider the best in my possession but even with the unfavorable season my loss was only about 4 quarts in 400 and I could have reduced it to zero if time had permitted, this showing I consider is without a parallel. But I fear a worse enemy to contend with is the whitegrub which destroyes the bush altogether and seems to be a hopeless case for any remedy. This season I dug up 20 bushes to make room for others, I was surprised to find that all of them were affected, none had fewer than four while one had as many as seven all busy gnawing at the fibrous roots. A few years ago I lost 30 bushes by the same pest. Mr. Brooks of this place a large gooseberry grower, having about 1400 plants had to dig up 90 bushes that were unhealthy by the same cause. Perhaps an oil lamp with a large glass surface lighted in the evenings to trap and burn the large brown beetle—progenitor of the grub—might mitigate the evil, and perhaps powdered glass put thickly around the bushes to prevent beetles from burrowing. Our experimenters have plenty future work to do.

An article on page 391 by E. Hersee of Woodstock, on selling unripe goose berries expresses the opinion I have long held on the subject.

Thanking you for the space taken in your excellent journal.

F. W. PORTER, *Mount Forest.*

THE IROQUOIS HORTICULTURAL SOCIETY.

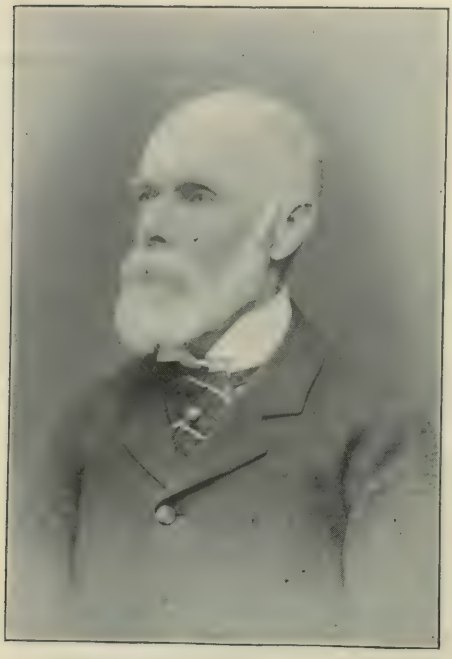


Fig. 1326.—Mr. Wm. A. Whitney.

THIS is one of the new affiliated Societies, which was organized this year with a membership of over sixty persons.

We have just received from Mr. T. S. Edwards, the following sketch of the newly elected president, Mr. W. A. Whitney.

Fig. 1327.—Residence of Mr. Wm. A. Whitney, Iroquois.

Mr. Wm. A. Whitney, M.A., was born in the County of Grenville, in 1834, and educated at Victoria College taking the degree of B.A., in 1860 and M.A. in 1864. In 1860 he became principal of the Iroquois High School retaining the position for 26 consecutive years, during which period he turned out many young men who became prominent in professional life. He was also classical Master of Morrisburg Collegiate Institute for seven and a half years.

He retired in 1893, since which time he has turned his attention to the cultivation of flow-

Fig. 1328.—Mrs. Alvah Brouse, 1st. Vice-President, Iroquois Hort. Soc'y.

ers and fruit and to bee culture. Indeed it is not a new departure for Mr. Whitney as he found a little leisure during his most active years of toil to keep a profusion of flowers and a good supply of fruit on his beautiful premises, consisting of 10 acres on the bank of the St. Lawrence just below the Eastern limit of the village.

He was unanimously chosen President of the Horticultural Society recently formed here, and very properly so as he was mainly instrumental in presenting the claims and benefits of the Society to the public and securing such a large number of our best citizens to become members. He is a man highly esteemed in the community where he has lived

FIG. 1329.—DR. JOHN HARKNESS, 2ND VICE-PRESIDENT, IROQUOIS HORT. SOC'Y.

so long not only as a scholar but also as a Christian and a gentleman. I need not mention here the various positions of trust and honor that such a man holds among his fellow men, but will close this brief biography by saying that I know of no other gentleman in these counties who has a better knowledge of flowers and fruits or a stronger desire for their propagation.

We also give a view of Mr. Whitney's house and garden, which is very attractive. Of the other officers of the Society, we have Mrs. Alvah Brouse, 1st Vice-President, and Dr. John Harkness, 2nd Vice President. Of the former we have no biographical sketch, but Mr. Whitney has furnished us a few notes concerning Dr. Harkness.

Dr. John Harkness was born in 1841 in the Township of Matilda, County of Dundas. He entered the Matilda Grammar School in 1854, beginning when Albert Carman, (now Dr. Carman of the Methodist Church) became the master, he remained a pupil till 1857, both he and the master quitting the school at the same time. He graduated in medicine at McGill in 1862, and soon after settled on the homestead where he has since lived, devoting his attention to his practice, his extensive farm, his large and well kept orchard and his library.

He is an enthusiast in the cultivation of flowers and has what may well be called a model vegetable garden For ten years he was President of the County Farmers Institute. He takes a great interest in education, having been Chairman of the Iroquois High School Board for the past seventeen years.

Mr. A. E. Overell is the energetic Secretary of the Society, upon whose industry and promptitude the future success of the body will largely depend. We show our readers both the Secretary and his home.

We have pleasure in publishing a paper on "Our Homes," written by the President of this Society, Mr. W. A. Whitney, upon a subject which cannot fail to be of interest to everybody, whether farmer or fruit grower.

FIG. 1330.—HOME OF MR. A. E. OVERELL, IROQUOIS.

FIG. 1331.—A. E. OVERELL, SECRETARY.

"OUR HOMES."

In these days of competition and low prices and bad seasons the material view of farming must be kept in view, if the farm is to be kept free from mortgage and a surplus secured for old age or the wherewithal to give our sons and daughters a fair start in life. But is the question of money and getting rich the only one to consider? I think all present will agree with me, when I say that a man whose only object in life is the acquisition of money, and whose sole delight is to tug and slave from early morn till late at night, is a miserable creature. We have souls as well as bodies, yea of infinitely more value than our bodies. These minds of ours have wants that cannot be satisfied with mere gain. Let us, by improved methods and scientific agriculture make all the money we can, but let us not neglect to cultivate the better part of our natures and enjoy all that is beautiful and elevating around us. I may be met with the objection, "We have no time for anything but hard work. After the day's work we are too fatigued for reading or music, or cultivation of flowers, and we have no taste for such things." I reply that the average farmer works too hard. I have known young men of twenty years of age whom hard work has deformed and stunted, who have never had a chance to grow up lusty, graceful men, who know but little except to plow, to sow and reap. No wonder they become tired of the farm and crowd our cities, often to fall into evil ways or to gain but a poor living. The farmer's wife also suffers in the struggle. She becomes prematurely old and loses the grace and comeliness of early womanhood. Induced by these thoughts I have decided to say a few words to you about our homes. I have travelled a little, and I can say that the farm houses in Ontario and in most of the County of Dundas are not surpassed by those of any country in the world. The past twenty years has witnessed a great improvement in this respect and in no other section more than in your own fair township.

But I have this criticism to offer that while a good deal of money has been spent in the buildings and their furnishings, too little attention and outlay have been devoted to the surroundings, as lawns, fences, trees and flowers. Allow me, then, to make a few suggestions about the "outside" of our homes. The site should, if possible, be on the higher ground of the farm front, in order that proper drainage may be afforded to secure a dry cellar and dry yards in wet seasons of the year. The barns and stables should be at sufficient distance to avoid unpleasant and unhealthy odors, and at a lower elevation to hinder, in rainy seasons, impure water from approaching the house or contaminating the well, from which the family supply

is drawn. In approaching our home, the visitor should not be obliged to pass a barnyard, or come in sight of pig pens or heaps of reeking manure piles. In most homesteads, these suggestions can be observed and at no additional cost or trouble.

A good lawn is a thing of much beauty. After the new house is erected, the clay and gravel from the cellar should be carted away, for it is almost impossible to secure a good sod upon it or make trees and flower flourish on it. With the plow, harrow and roller a level or sloping surface can be made in front and around the house in a few hours and a suitable mixture of seed can be got from any seedsman for a trifling sum. For a year or two, it will require rolling in spring and a coating of well rotted manure in the fall. A lawn-mower will be necessary, if you would have a perfect lawn. A sharp scythe, however, will do very well. I would avoid disfiguring a nice lawn by cutting it up by too many flower beds or too much shrubbery. Nothing is nicer than the broad, level, velvety-green of nature. Place your flower garden away from the front of the house and your shrubbery in clumps at the sides of the lawn A plain board walk from the gate to the entrance is cheaper and more easily kept in order than a gravel walk.

And now a few words about the trees. In the first place, they should not be near enough to shade the house. The sunlight is needed to keep off mouldiness and dampness, which are deadly enemies to the health of the inmates. Do not plant too many trees about your houses or too near together. Choose trees for home adornment and shade that have straight trunks and that may be trained and have well-shaped tops. The maple is largely planted and rightly so, but let me suggest the propriety of trying a few basswoods, with their clean smooth trunks, broad leaves and pendent white flowers. They grow very fast also, which is a great consideration. If the beech were a fast grower I know of no tree I would prefer to it. If you plant evergreens, do not cut away the lower branches. They should form a perfect cone, the base of which rests on the ground. I would not allow trees to remain on the home grounds till they become too large or begin to decay. Around some houses you will see old, ragged specimens of balsam or spruce that have been trimmed of side branches to the height of twelve feet or more. Their usefulness has gone. I would advise farmers to be content with our native trees, which he can get from the woods without cost. But if we desire a variety, let us get a few of the Mountain Ash, Chestnut, Sweet-scented Locust, and that most beautiful tree, the Cut-leaved Birch, and any others that are hardy. In transplanting, especially the evergreens, care should be taken to cover the roots with a wet blanket or in some way keep them from drying. I would not advise planting apple trees on the lawn, for fruit bearing keeps their tops too low and drooping. While young, it must be admitted that their flowers in spring and fruit in autumn are beautiful indeed.

If the house is at a sufficient distance from the public road, the driveway may be lined on each side with trees. In a few years you will have a leafy arch overhead like the nave of a gothic cathedral. The matter of tree planting and culture is beginning to receive better attention. If all farmers would follow it up judiciously not only near the residence but along line fences and elsewhere, the amount of rain fall would be largely increased; winds would be broken in their destructive career, and

in time, they would be substantially rewarded by returns in wood and lumber.

A word or two about fences. The cost and material and style are matters to be left to the taste, and size of purse of each one concerned. But, whatever be the kind or expensiveness, let them be neat and be kept in good repair. An hour's work will save the place from having a tumbled-down appearance. A great mistake is made by many in fencing in a small enclosure in front of the house called a front yard; this is generally allowed to grow up with long grass and lilac bushes, reminding one of many of the enclosures in a church yard. If cattle, and sheep and pigs were to roam at will; such fences might serve some useful purpose by guarding the front door from their entrance; but surely this is not now the excuse for their existence. In parenthesis may I say that the farmer spends far too much money and labor on fences. Stock has no business or right to roam at large on public highways and meadows, and orchards should be debarred their presence. Thus of what use are fences in such locations? Their only plea for existence is custom, or to harbor stone heaps, weeds and useless underbrush.

And now I come to speak of one of the chief features of outside home adornment—flowers. I am met at the outset by protest of the farmer that he has no time or taste for such things. As to time, we answer, that a few hardy flowers would not demand much time, and as to the taste for them, that he should cultivate a taste for such God-given, beautiful things.

If he will not cultivate them for his own sake, surely he will spend one hour a week to please the wife and daughters. You will scarcely find a woman in the country who does not love flowers, and do a little at least in their culture. If you desire, but do not know how, to cultivate flowers, I would strongly advise you to take our own HORTICULTURIST, and if possible form a Horticultural Society. You will gain in knowledge and pleasure many times the amount of the subscription. Allow me then to trespass on your patience for their sake. Those who know but little of flower culture, should commence with a few hardy kinds, extending the list as experience is gained. Flowering shrubs are easily raised and cost but a trifle, with moderate care, they will continue to bloom for many years. I would have sweet syringa, barberry, mock orange, weigela, dogwood, hydrangea and a few others. The rose is the queen of flowers and for it the soil needs to be very rich. In summer pinch off the top of new growth, to make the plant stocky and wood well ripened. In spring cut back to two buds. It has numerous parasitic enemies. The white louse may be destroyed by fumigating with tobacco smoke. The worst enemy is the red spider which is best destroyed by sulphur fumes. The common cabbage rose and the small white or yellow sorts, if thus treated, will surprise and delight you with their beauty and odor. After you succeed well with these common sorts, buy a few hybrid perpetuals such as Jacqueminot, La France, Alfred Colomb, and La Reine, etc. It is better to plant all your roses in a square or round bed, so that they may be the more easily smoked or sprayed. The variety of the colors and foliage affords a fine contrast when so planted. The amateur would do well to cultivate perennials, as one planting will suffice for years. Among these, the Sweet William is very hardy and showy, and some kinds of pinks are perpetual and are very sweet and pretty. A few others are the daisy,

lily of the valley, phlox, peony, lily, tulip, gladiolus, etc.

Annuals also should be cultivated, if we would have a succession of bloom throughout the season. We depend on them for fall flowers. The seed should be sown in the hotbed, or in boxes placed in the window in early spring. As soon as there is no danger from late frosts, they are transplanted into beds on a rainy day. The soil should be clean of weeds, well and deeply worked and rich. All the plants of one kind should be massed together to secure the best effect. Experience will tell us how far apart the young plants should stand. The larger kinds such as stocks, asters, verbenas and petunias should be about one foot apart, while phlox, pansies, etc., may be put at six inches in distance. The pansy does best in a partial shade. After the first year's purchase of seed, you will not need to spend much, as you can save seed that will produce almost as good flowers as their parents. I generally buy new seed every year as it does not cost much, the bloom is better, and it takes some time and trouble to save the seed. There is another item in outside home adornment that I must refer to, viz, paint.

The fences and outside woodwork, such as cornice, windows and doors are often allowed to go unpainted until their original hue is almost gone. They become unsightly and rotten. It pays as well as improves the appearance to repaint oftener. All I have aimed to do is merely suggestive and elementary.

GROWING FANCY MARSHALL STRAWBERRIES.

THE berries were grown by the ordinary matted-row system. After taking out plants for resetting, we left a row about 10 inches wide, and mulched this well with marsh hay. Last year, we bedded in runners and mulched in the spring. This year, we are using the narrow-row system. We set plants with a spade, and cut the roots to about three inches in length. A man uses the spade, and a boy follows with a basket of plants, and puts each plant in back of the spade, spreading the roots fan-shaped. We use a small handful (about 400 pounds to the acre) of commercial fertilizer costing about $38 to $40 per ton, about ten days after the plants are set. We use a tool made by ourselves especially for putting on the fertilizer. It consists of a long tube and two funnels, one within the other. The inner funnel sets over the plant, and when the fertilizer is dropped through the tube, it falls in a rim around the plant, and none of it touches the foliage. In the Fall, we use 500 pounds of ground bone, and 250 pounds of sulphate of potash to the acre. We don't use muriate; it will burn them.

After the plants are set, we use a garden rake about them to stir the soil, and Breed's weeder till July 1st. I set berries this year 2½ x 3 feet apart. I use a marker made of flexible board, with shoes underneath. If the surface is uneven, the thin ash board will bend and reach every depression. I set plants at the intersections of the marks, keep off all runners till the middle of July, and cultivate both ways till the runners are rooted. I allow four runners to root from each parent plant, and place them at regular intervals between the old plants. It costs about $10 to keep the runners off, and I think that it pays well. I put on nearly four tons of straw to the

acre this winter; I put it on early, not covering the plants, but between them. On the approach of the coldest weather, I place part of it directly over the plants. Of varieties, I prefer the Marshall. It did better on upland than on the flats this year. I also grow the Brandywine and Wm. Belt. The latter is liable to blight, but I am not troubled much that way. Marshall yielded at the rate of over 10,000 quarts to the acre. I put many of them up in fancy packages, and sell six quarts for $1 50.—Report Oswego Horticultural Society.

FIG. 1332.—BARREL-GROWN STRAWBERRIES.

BARREL-GROWN STRAWBERRIES.

IN response to an enquiry, Mr. F. W. Ritter, of Dayton, O., sends another illustration of Mr. Ohmer's plan of growing strawberries. We give place to the engraving and to the letter because it would seem such an excellent plan for the city garden, where ground room is limited. Mr. Ritter writes :—

"I have to-day mailed you a photo of four barrels of strawberries, Mr. J. P. Ohmer is on the right in the small wagon, with the single barrel. This is J. P. Ohmer and not Nick Ohmer as the American Gardening labeled the picture; they are brothers, and both noted horticulturists."

PREPARING NEW STRAWBERRY BEDS.

WITH the coming of spring, comes the preparation of new plots of strawberries, such as digging and trimming, when not purchased, and setting them in the prepared beds.

There are so many simple details connected with the work, that many are inclined to slight some of them, to the detriment of the plants. One of the most important ones is the preparation of the soil. I never yet saw a piece of land too well fitted, but I have seen a great many which were very poorly prepared. My first lasting impression of this work was when a small lad, I had to hand-rake my father's beds several times over before he ever set a plant, and the thoroughness of this work was one of my parent's hobbies, if such it may be called, for I used to wonder why I had to work over the soil so many times when it seemed as though another time over was only time lost.

The success which always attended my parent's labor was amply rewarded, for I cannot remember he ever had a failure in starting his beds.

With our improved machinery, it is not necessary that we do so much hand-labor now, but in the absence of such I would surely resort to it.

When I first started in the fruit business, I only had a light spike-tooth drag and a plow, I made me a plank-drag, or some call it a float, and used it in connection with the harrow; by this process I was able to secure a finely pulverized surface in which to set my plants.

If one uses his own plants for setting, he should be sure they are only one year old, and were not taken from beds which had previously borne fruit, for whenever a plant matures its seed a portion of its vitality is gone with it, much to the detriment of the young plants.

I always plant a few rows separate for propagating purposes; these plants are never allowed to mature seed, and so by careful culture, I am able to maintain a high standard of plants, which I would not get if I allowed the other plants to bear.

The method of setting is quite important, and a great number of valuable plants are lost, either through carelessness or ignorance.

It is as fatal to set too deep as too shallow, for the new leaves must have a chance to push out to the sunlight that they may breathe for the plant, as they are the lungs, being the organs through which one of the most valuable elements of the plant is obtained.

If set too shallow the roots are apt to be exposed so that the moisture which they should convey from the soil to the plant, is evaporated into the air and death soon follows.

After a bed has been successfully set, to keep the plants growing continually throughout the season, is no small matter. The same fine soil should be maintained by using a fine tooth cultivator and a garden rake.

I cultivate my beds once or twice thoroughly, as it may be necessary, and then pass along the rows with a garden rake, and work the soil level and fine as when first set. This is no great job, as some may suspect, as I can go over an acre a day.

This process is continued throughout the season, or until new runners get too numerous to use the rake, then we use a narrow-blade hoe.

It will greatly lessen this work, if the

soil on which the plants are set, has grown one or two cultivated crops the previous season. Many think that a rich soil is the best, but in my mind, it is the worst, for it is full of foul seed and the larva of many pests which are ruinous to the plants.

B. A. WOOD.

Kalamazoo Co., Mich.

THE LOUISE PEAR.

FIG. 1333.—THE LOUISE PEAR.

AMONG our autumnal varieties of pears of fine color and consequent attractive exterior, there is no more desirable than the Louise Bonne de Jersey. Grown as a dwarf on quince stock it succeeds remarkably well on sandy soil in the Niagara district, reaching a fine size; but, as a standard, it is inferior being small and sometimes scabby.

During the season of 1897, some cases of this variety, containing about a bushel, were shipped from Grimsby and sold in the British markets for 15/ each.

This pear is well spoken of in the Fruit Grower and Fruiterer (England), as follows :—

LOUISE BONNE DE JERSEY.

We select this as the second pear, and readers will at once admit that as regards quality, appearance, and flavor, few pears grown equal it. We know of no pear to surpass it, and it has become one of the leading market pears, because of these qualifications alone. Now we have here a variety which, when well grown, may be said to be one of the best flavored pears procurable. In the best class shops it may often be seen when in season, marked up at high prices, and punneted, it adds to the attractiveness of the fruiterer's window on account of its beautiful color. We have often referred to the many points in favor of this pear, and are rather astonished that anyone mindful of the chief features of this and other leading pears should assert that quality or flavor in pears is a secondary consideration when the contrary is the case.

RESULTS OF THINNING FRUIT IN 1897.

THE time has come in the history of fruit growing in Ontario, when finer fruit is wanted, not more of it. Indeed we must cease to produce the poor, small, scabby and wormy apples altogether, the stuff that gluts the markets and spoils our reputation abroad, and instead, produce only the fine large highly colored samples which our country is so well adapted to produce, by giving that attention to the growing crop which it deserves.

Frequently in the past the importance of tillage and fertilizing has been emphasized in these columns, but sufficient stress has never been given to the thinning of our fruits. By this means it is possible to remove at an early stage all the poor and ill-formed samples, and leave only the finest. The best of all is that the quantity of the yield is not lessened by this apparent waste, but often increased, by the increased size; but even if lessened, the financial results would be much better, by reason of the higher prices obtained.

The following are some of the actual results obtained at Maplehurst during the year 1897, and it will be seen that in peaches, especially, the benefits were most marked. In this experiment pairs of trees were se lected which were a nearly as possible of the same size, and equally laden with fruit. It was most astonishing to find in some cases even more baskets of fruit, from the trees thinned, than from those not thinned.

THINNING FRUIT—RESULTS OBTAINED AT MAPLEHURST, 1897.

Variety.	Date.	Quantity Removed.	Hours required	Yield in 12-quart baskets.	
			One tree.	Thinned tree.	Tree not thinned.
Peaches—Alexander, 2 trees	June 21	1	2	11⅓	9½*
" "	" 23	1	½	8	4½*
Honest John, "	"	1	¼	1	1
Centennial, "	"	1	¼	7**	5
Hale's Early, "	"	1	1	9¼	7*
Waterloo, "	"	1	⅓	5+	5½
Crawford, "	"	1	⅓	2+	2
Early Rivers, "	"	1	⅓	13½+	9*
Apples—Spy, "	July	1	.....	9+	13++
Pears—Clapp's Favorite, "	"	1	.....	11	15++

*Loss from rot. **Increased size of fruit. †Extra size and clean. ††Thinned too late.

WHY ORCHARDS ARE FAILING.

EXPERIENCE is one of the most potent factors in our development. It brings facts and causes to our view better than possibly anything else. This point is well illustrated in my mind by an illustration of practical value. An orchard on my father's farm, and not an old orchard either, seemed to be failing, and produced but little merchantable fruit. There was something wrong. This failure or partial failure was not

due to insects or lack of care in the usual sense. It never occurred to us that perhaps there was a lacking of fertility in the soil. At the same time, we were growing wheat, adding manure and even commercial fertilizers to get a maximum crop. We had used every method in the development of the field crops but perfectly neglected the orchard. Not intentionally either, but because we thought it was not necessary and that an orchard had an easy time of it anyway.

But soon after I went to College, I studied plant growth, chemistry, etc. My eyes were soon opened. I soon realized that the depletion of the land by the fruit trees is more serious than by annual crops, for this fact: plant foods are locked up for many years in the trunks and branches of the trees, while a large part of the fertilizing elements in the common crops is returned to the soil each year. Besides the fruit taken off, removes plant food that is seldom ever returned.

It has been estimated that an acre of apples during the bearing season will remove about 49 lbs. of nitrogen, 38 lbs. of phosphoric acid and 72 lbs. of potash, the value of which would be $12, at the average prices paid for fertilizing material furnishing these ingredients on the market. Is it any wonder then that orchards are failing? Taking from the soil that amount of plant food each year, it is only natural that the time soon comes when one gets but a partial crop. In ten years the amount of plant food removed from the soil will amount to $120. Now for the orchard land to be kept in perfect bearing condition, these fertilizing elements must be returned in some form.

We know the value of clover, cow peas, vetches, crimson clover, etc., in adding nitrogen to the soil. Fruit trees require humus. Plow up the orchard and sow clover, then keep the orchard clean and clear of weeds and insects. Humus is added, and at the same time an abundance of nitrogen is supplied to the soil for the use of the trees. It remains then only to use phosphoric acid and potash, which can be readily obtained in the form of acid phosphate and muriate of potash, an average dose of these would be about 300 lbs. of the former, and 200 lbs. of the latter. It would be better to apply the potash and phosphate before the clover is sown, as they will assist in making a full crop of clover, which means the absorption of larger quantities of nitrogen, and the whole mass turned under will improve both the physical and chemical condi- of the soil.—CHARLES W. BURKETT.

Ohio State University.

THE VINEYARD.

The Site. — The investigating fruit-grower will find in Ontario healthy and paying vineyards, situated upon nearly all classes of soils. The grape is a warmth loving plant, and undoubtedly the most favorable location is that which furnishes a loose, well drained clay loam, in addition to a free atmospheric circulation. Good soil drainage is imperative if a long-lived, productive vineyard is the ambition of the fruit-grower. There are examples of the ill effect of imperfect soil drainage to be found in some of the best grape growing sections of Ontario—a yellowing of the foliage—dropping of the fruit—indications are that there is something radically wrong. Occasionally late spring frosts visit us, the injury is most severe as a rule in the lower levels of the vineyard. In Eastern Ontario and Quebec, where the summer heat requisite to bring some of our best varieties to maturity is deficient, a warm southern exposure should be selected. If this is protected by wind breaks on the north and west, so much the better.

Preparing the soil. — Hoed crops, meaning those requiring cultivation, in summer, as roots and potatoes, should precede vines. When the ground is cleared of these, a good plan is to plough it into narrow lands, allowing the dead furrow to fall into the line of each proposed row. Subsoiling is of prime importance, and should be done as thoroughly as possible. If the ground is allowed to remain in this condition till spring, the pulverizing action of the frost will have acted beneficially upon the soil, greatly increasing its mellowness and friability.

Time to plant.—In the best grape growing sections, both fall and spring planting is practised, most growers claim, with equal success. The amount of leisure time, therefore, may be allowed to guide the planter, although in fall planting the ameliorating influence of the frost upon the soil previous to planting is lost. Fall set plants should also be protected by throwing a furrow against them on each side. In the east and north, spring is undoubtedly the best season.

Distance apart and how to plant.—Grapes, like apple trees, require room, according to their vigor—Daleware, Moore's Early and Moyer do well 8 x 8 feet apart, or even less. Strong growing varieties, like Concord and Niagara, need more room between the plants in the new row and should be 10 feet apart, though as a general rule 8 x 10 feet is the distance used by most planters. At the north, it is important that the vine should be planted deeply, 15 to 18 inches being often recommended. To obtain this depth, the vine is planted in a hollow, which is filled gradually subsequent to the growth of the plant. Ten to twelve inches may be accepted as the ordinary depth. It always pays to buy strong plants. They quickly return the price in fruit. Occasionally satisfactory yearlings may be secured, but strong two year olds are much better. As in setting out tree fruits, be careful to remove all bruised portions of roots; the fibres should not be allowed to become dry; the earth should be firmly packed about the roots.

Intermingling varieties in the vineyard.—It has long been a common observation that certain varieties set loose straggling bunches when planted in blocks by themselves. This is the result of imperfect pollination. The experiments of Prof. S. A. Beach, of the New York Experiment Station at Geneva, have given us a list of those varie-

ties, fertile, partially fertile and nearly, or wholly sterile, with their own pollen. It will be noticed that the majority of the self-sterile varieties are hybrids—the product of two distinct species.

*The following list is only partial, but includes the principal commercial varieties.

I.—Grapes fully self-ferile—

Variety.	*Parentage.*
Campbell,	Lab. x Vin.
Deleware,	Vin. x.
Janesville,	Lab. x. Vulp.
Moore's Early,	Lab.
Niagara,	Lab.
Poughkeepsie, Red,	Lab.
Rogers' No. 13,	Lab.
Rogers' No. 24,	Lab.
Rogers' No. 32,	Lab.
Winchell,	Lab.

II. Grapes partially self-fertile, but practically capable of fruiting satisfactorily if planted alone :—

Variety.	*Parentage.*
Agawam,	Vin x Lab.
Brilliant,	Lab x Vin.
Catawba,	Lab.
Clinton,	Vulp.
Concord,	Lab.
Empire State,	Lab.
Jefferson,	Lab.
Vergennes,	Lab.
Worden,	Lab.

III. Grapes partly self-fertile; set fruit unsatisfactorily when planted alone :—

Variety.	*Parentage.*
Adirondack,	Lab.
Amber Queen,	Rip.
Canada,	Rip. x.
Duchess,	Lab.
Eumelan,	Lab.
Perkins,	Aest.

* A complete list is given in the Annual Report of the Ontario Fruit Growers' Association, p. 98.

IV. Grapes which bear abortive fruit, but do not perfect fruit when planted alone :—

Variety.	*Parentage.*
Aminia, (Rogers' No. 39),	Lab.
Brighton,	Lab.
Essex, (Rogers' No. 41),	Lab.
Gaertner, (Rogers' No. 44),	Lab.
Massasoit, (Rogers' No. 3),	Lab.
Merrimac, (Rogers' No. 19),	Lab.
Requa, (Rogers' No. 28),	Lab.
Rogers' No. 5,	Lab.
Salem, (Rogers' No. 53),	Lab.
Wilder, (Rogers' No. 4),	Lab.

V. Grapes in which self-pollination has no perceptible influence on the ovary :—

Variety.	*Parentage.*
Amber,	Vin x Lab.
Barry, (Rogers' No. 43),	Lab. x Vin.
Creveling,	Vin x Aest.
Eaton,	Lab.
El Dorado,	Lab x Vin.
Lady,	Lab x Vin.
Lindley, (Rogers' No. 9),	Lab x Vin.
Norwood,	Lab.

Cultivation.—"Frequent cultivation" should be a motto in growing a vineyard. The surface should be kept mellow by the frequent passage of the cultivator or grape hoe. This latter, is an exceedingly useful implement in the vineyard or small fruit plantation. In a dry season the importance of frequent shallow cultivation, as a means of retaining the moisture of the soil, is not easily over estimated. A good practice is to plough to the vines in the late summer and away from them in the spring. The furrows nearest the trellis should be very shallow, as the surface soil is filled with fibrous roots. The cultivator and grape hoe will do the work during the remainder of the season. A cover crop is of great service in the north, to catch the snow, and thus afford protection to the

roots of the vines. Crimson clover does not, as a rule, make sufficient growth to afford much protection when sown as late in the season as seems desirable. Probably rye or field pease will serve the purpose and will also give some return when ploughed under. Grape growers in this vicinity make special arrangements in the way of providing movable "snow catchers" for the more exposed parts of their vineyards. This is very important when the vines are young.

Fertilizers.—Heavy fertilizing with barnyard manures will, in most cases, induce an over luxuriant growth with a tendency to mildew of foliage and fruit. A dressing of barnyard manure once in three years will probably give sufficient nitrogen. The phosphoric acid and potash (both of which are largely drawn upon by the grape vine) should be supplied the two remaining years. Wood ashes or muriate of potash, and superphosphate or bone meal will supply these.

Training and Pruning.—To carry out any system of pruning properly, and there are many, one should understand the underlying principles, and these are the same throughout. The vine produces its fruit near the base of the growing shoots that spring from the wood of last season's growth. These shoots go on growing after producing two or three clusters of fruit; a bud is formed every six or eight inches. If the cane makes a growth of eight or ten feet it would mean a dozen or more such buds. Then if this cane were not cut back each bud would throw out a shoot the following spring, which would bear two or three bunches of fruit. As each vine would carry ten or fifteen such canes it is easily seen that the crop of fruit would be greater than the vine could properly develop and mature. Pruning, is therefore, practised as a means of thinning the crop and keeping the vines within bounds and under control.

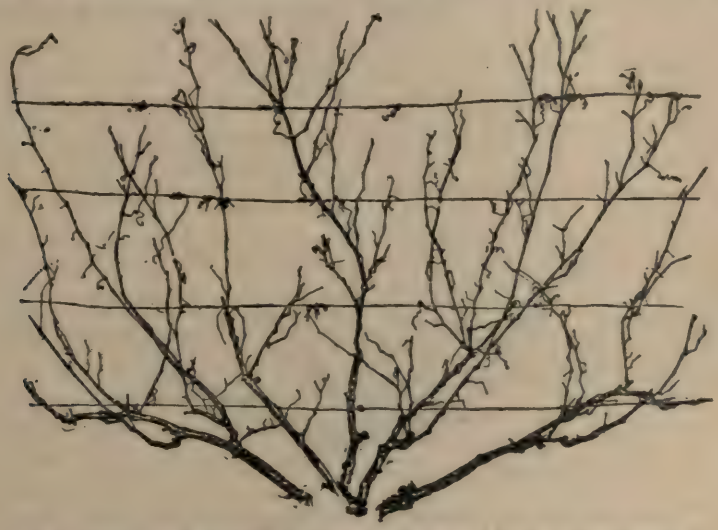


FIG. 1334.—FAN SYSTEM BEFORE PRUNING. *(From a photograph.)*

In Quebec and Eastern Ontario, where vines need winter protection, and are carried through the winter by laying them down and covering them with earth, two systems of training are practicable only. Whatever system, the cane may be cut back, to two eyes at the first year's growth in the vineyard.

Fan System.—This is used most freely

where vines are protected in the autumn by laying them down and covering them with soil. The canes are carried up from the ground in a divergent manner, in the form of a fan. The old canes are cut out and removed from time to time as they grow too rigid to allow of easy bending. At the close of the growing season after the leaves have fallen, the greater number of the canes are cut back to the last bud. A few of the strongest are left, in order to carry the fruit to a greater height upon the trellis.

There is a tendency on the part of the grower to allow too much wood to remain on the plant in the autumn, especially when it is young. The vine should not be allowed to bear the second year after setting out, and only a small crop the third year. I quite realize that instructions of this kind are much easier given than understood and carried out. A heavy crop of fruit borne by young vines the third year after planting will sometimes ruin the yield for two or three succeeding years, and often destroy the vines. The prospective crop may be more or less accurately estimated by multiplying the number of buds by two, this kind of estimate may be used as a guide in pruning. The fan system aims, at starting the canes near the ground, giving the vine practically several main stems.

High Renewal. — This system, or modification of it, are probably more generally adopted throughout Ontario than any other. It aims at starting the head about two feet from the ground, so that the main branches are tied to the lower wire. The vine is usually started the second year with two canes striking out in Y-shaped fashion. In the fall of the same year all side shoots are cut back closely and the main canes cut back to four or five buds each. The third season three or four of the strongest roots springing from the centre of the head are allowed to grow. In the autumn these replace the outer arms, and in turn are replaced by them the following season. The aim is, then to renew the fruiting canes from different parts of the old wood every year. The number of buds to be left will depend upon the strength of the variety and the individual plant. Concord, Niagara and Worden will carry with safety more wood than Moore's Early or Delaware. As the canes grow they are tied to the wires of the trellis, distributing the foliage as much as possible. It is usually found necessary to go over the vineyard two, three and, occasionally four times,

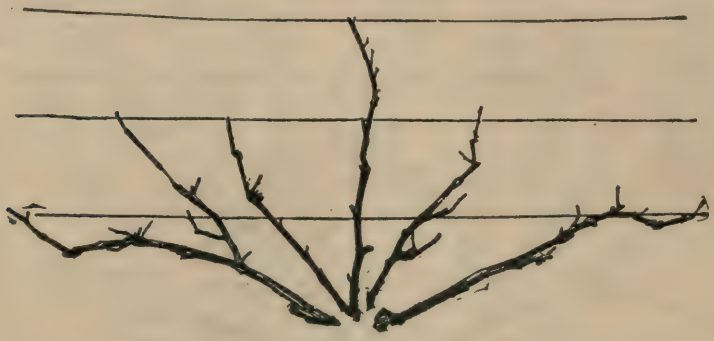


FIG. 1335.—FAN SYSTEM PRUNED. *(From a photograph.)*

during the summer, in order to properly secure rapidly growing wood, so that the bunches are held clear of the ground. When the head becomes weak, as it may, after a few years, it is necessary to train up a new shoot from the ground.

Horizontal System.—This method of training is especially adapted to sections of the country where it is advisable to give the vines winter protection. Two strong canes are trained in opposite directions. The latterals springing from these are trained perpendicularly. In the autumn the latterals are cut back to two spurs. When the spurs become weak they are renewed, as is an entire arm occasionally. This system calls for a four-wired trellis, in order to properly tie the strong laterals. The three methods of training described thus far, are all on the upright plan; in those which follow, the vines hang down and are termed drooping systems.

Four Cane Kniffen.—In this system the trellis consists of two wires. The main cane is carried to the top wire and from it an arm is trained each way on the two wires. The side canes are tied to the wires and the lower ends allowed to hang free. The advantage of this system over others is that it obviates a large amount of tying and perhaps lessens the amount of summer pruning.

FIG. 1336.—KNIFFEN SYSTEM.

FIG. 1337.

This Kniffen system is largely used in the Hudson River Valley, N.Y., where it originated. It has been strongly recommended and is in favor for strong growing varieties. In pruning a full grown vine, the upper arms are usually allowed to carry a greater number of buds than the lower. Thus, many allow ten buds to the upper, and five buds to the lower canes. The arms should be stretched along and attached firmly to their respective wires; from these the laterals droop. When the arms become weak they are renewed from the head.

Modifications of this system are found—one umbrella, falls from a single high wire only, others carry six or eight canes, but all are drooping.

Over-head or Arbor-Kniffen. This method of training is practised by a few prominent fruit growers in Ontario. The vines are carried up seven foot posts and allowed to rest on cross wires, forming in this way a kind of arbor. One plan is to nail a cross piece to each post at right angles to the pole. This extends three feet on each side. Three wires are stretched on these, one at each end, the other in the middle to the posts. The trellis is thus a horizontal one and six feet above the ground. An unbranched trunk is carried up to the

middle wire and the canes spread either side from this point. A T-shaped head is considered the ideal form. Another over-head system is known as the "Cross Wire Kniffen." In this a small post six or seven feet high is set for each vine.

The tops of the posts are connected by cross wires. The vines are trained up the posts, and on reaching the top four arms are trained outwards, one on each wire. In the autumn the arms are cut back to six or eight buds each. In the case of the over-head systems, movable platforms may be used in harvesting the fruit.

Post Training.—This has been used at Ottawa in order to compare it with trellised vines. It has not given satisfactory results. When the foliage is crowded on a small post the fruit colors slowly and unevenly, and mildew and rot are encouraged.

Summer Pruning.—It is always desirable to remove the shoots that spring from or near the base of the vine, except when they are required for a special end. These shoots are quickly broken out, or nipped off when still soft and succulent. A certain amount of shortening back is also desirable. This should not be done too early in the season. In summer pruning of Lindley, for instance, I have found it best to shorten back after the first strong growth has taken place. If pinched early in the growing season a great mass of laterals is produced and the amount of work very much augmented.

The Trellis.—It is well to set the posts the year following the planting of the vineyard. If trained on the upright system, the posts should stand five feet to six feet above ground, and be not less than six feet high if the over-head system is adopted. Cedar or oak are preferred on account of durability. The end posts of each row should be thoroughly and efficiently braced, either with a brace on the inside, or on the outside, with a strong wire running from the top of the post to a stone firmly imbedded in the ground. No. 12, plain annealed wire is ordinarily used and is fastened to the posts by wire staples. The posts are usually set far enough apart—in the upright systems—to allow of two vines being planted between each two posts. The wires should be run through the end post and be attached and wound around a piece of wood, which will act as a spool, to enable the growers to tighten them in the spring and to loosen them in the autumn, thus allowing for contraction. Raffia—the product of a palm-like plant—wool twine and osier willows are used in tying the canes to the trellis. The first named, is a cheap and very satisfactory material for the purpose.

CARE OF THE FRUIT.

Thinning. — Reference has already been made to the desirability of pruning with a view to restricting the quantity of fruit and of providing for its even and irregular distribution upon the vine. The size of the bunches may be materially enlarged by a judicious removal of the smaller clusters. The size of the berries may also be increased by thinning the berries on each bunch where they are closely set. The average grower cannot afford the time required to do the latter, except, perhaps, in the case of exhibition samples—nor do all varieties call for this treatment. In this age of keen competition it will, I believe, pay growers to remove a portion of the smaller bunches when "tying" and "suckering." The effect will be seen in the improved size and appearance of the remaining product. "Ringing"

canes, which produces large clusters and berries, at the expense of quality, should be discouraged.

Spraying.—This is not always needed. If properly done, it is always effective. Downy mildew attacking leaves and fruit, may be prevented by using Bordeaux mixture. Make the first application as the buds are bursting, the second, just after the fruit has set, and the third, two weeks later. If later applications are needed, ammoniacal copper carbonate should be used. Powdery mildew also yields to Bordeaux mixture. "Anthracnose" or "Bird's Eye rot," is one of the most serious troubles affecting grapes in Eastern Ontario and the province of Quebec. It is kept in check only when the utmost care and vigilance is exercised.

1—Spray the canes when uncovered and still dormant, with copper sulphate, one pound to 25 gallons of water.

2—Follow this with Bordeaux mixture, as directed above.

3—Remove and destroy diseased foliage and fruit as soon as it makes its appearance.

4—Fertilize with wood ashes and bone meal, supplemented with light dressings of well rotted barn-yard manure.

Picking and Packing.—Growers almost invariably pick into the baskets that are shipped to market. Thin skinned grapes of fine quality, like Delaware and Brighton, should always be packed in small baskets. A ten-pound "veneer" basket is a favorite in the Niagara district. A basket rack, holding two baskets, is a convenient device to use in the vineyard. The bunches may be cut with a sharp knife or pruning shears, as preferred. They should be cut off close to the cane and placed stem end down in the baskets, laying the bunches regularly till the receptacle is filled. The filled baskets are taken to the packing house, weighed, the finishing touches put on, in the way of facing, etc., and then covered. A leno cover of suitable color attached to a veneer frame, when fastened down, completes the package, the name of the variety being stamped upon the end or top. The bunches should always be handled gently to prevent bruising and cracking. Concord and Worden are usually shipped in 20-pound baskets. Good keepers like Vergennes and Catawba, are sold, advantageously in winter in 5-pound packages.—*Report of Horticulturist Central Experimental Farm.*

THE WAY TO HANG A HAMMOCK.

The ideal way to hang a hammock is to place it six and a quarter feet from the ground at the head, and three and three quarters at the foot. The rope that secures the head should measure about one foot—it is better to be less—and at the foot about five times that. The object of this is to keep the head comfortable, by being nearly stationary, while the lower part of the hammock will swing freely.

SUMMARY OF REPORT OF WILLIAM M. ORR,

SUPERINTENDENT OF SPRAYING EXPERIMENTS,

Conducted throughout Ontario, by direction of Department of Agriculture of Ontario, during 1897, showing the kind of fruit sprayed and the gain made.

NAME OF APPLE.	W. A. Warren's Orchard, at Trenton.		George Adams' Orchard, at Smithville.		J. R. Thorn's Orchards, at Picton.		G. Moffat's Orchards, at Wingham.		Alex Cameron's Orchards, at S. Lancaster.		All the Orchards Sprayed. Total.		Average.	
	Spr'd.	Unspr ayed.	Spr'd.	Unspr ayed.	Spr'd.	Unspr ayed.	Spr'd.	Unspr ayed.	Spr'd.	Unspr ayed.	Spr'd.	Unspr ayed.	Sprayed	Unspr ayed.
Spy	76	8	90	0	90	10	80	0	.....	.....	336	18	84	4½
Snow	75	0	80	0	75	25	100	5	100	60	430	30	86	6
Wealthy	90	20	.....	.....	.....	.....	.....	.....	.....	.....	90	20	90	20
S. Permain	75	5	.....	.....	.....	.....	.....	.....	.....	.....	75	5	75	5
Baldwin	90	10	.....	.....	.....	.....	.....	.....	.....	.....	90	10	90	10
B. Greening	76	5	.....	.....	.....	.....	95	30	.....	.....	171	35	85½	17½
Swaar	.....	.....	80	0	75	10	.....	.....	.....	.....	155	10	77½	5
Rox. Russet	.....	.....	90	0	.....	.....	.....	.....	.....	.....	90	0	90	0
Canada Red	.....	.....	90	0	.....	.....	.....	.....	.....	.....	90	0	90	0
Newton Pip	.....	.....	90	0	.....	.....	.....	.....	.....	.....	90	0	90	0
Colvert	.....	.....	.....	.....	90	.....	90	40	.....	.....	180	40	90	20
St. Lawrence	.....	.....	.....	.....	75	10	.....	.....	90	10	165	20	82½	10
Golden Russet	.....	.....	.....	.....	90	25	.....	.....	.....	.....	90	25	90	25
Bellefleur	.....	.....	.....	.....	75	10	.....	.....	.....	.....	75	10	75	10
Red Astrachan	.....	.....	.....	.....	80	15	.....	.....	.....	.....	80	15	80	15
Pippin	.....	.....	.....	.....	.....	.....	90	0	.....	.....	90	0	90	0
Duchess	.....	.....	.....	.....	.....	.....	100	50	.....	.....	100	50	100	50
Maiden's Blush	.....	.....	.....	.....	.....	.....	95	50	100	00	195	50	97½	25
Tal. Sweet	.....	.....	.....	.....	.....	.....	95	2	.....	.....	95	2	95	2
Alexander	.....	.....	.....	.....	.....	.....	.....	.....	100	10	100	10	100	10
Baxter	.....	.....	.....	.....	.....	.....	.....	.....	90	10	90	10	90	10
Haas	.....	.....	.....	.....	.....	.....	.....	.....	100	20	100	20	100	20
Actual Results	482	48	520	00	650	105	745	177	580	70	2977	380	Average	Per Ct.
Total Possibility	600	600	600	600	800	800	800	800	600	600	3400	3400	87¼	11¼

The above table will show the individual orchard sprayed, and in column 7 will be seen the results of spraying each kind of fruit in all the orchards. As an example, take Spy: it will be seen this kind was sprayed in four places, at Trenton 76%, Smithville 90%, Picton 90%, and Wingham 80% of good fruit, or 336 barrels of good fruit out of a possibility of 400 barrels; whereas those unsprayed gave 18 barrels only, of good fruit, out of a possibility of 400 barrels; or, in the case of the sprayed, 84% were good, and only 4½% were good of those unsprayed.

All the kinds are shown in the same way, and the total of all kinds sprayed show 2977 barrels of good fruit out of 3400 barrels, or 87¼%; while of those unsprayed, only 380 barrels were good, out of 3400 barrels or 11%. In point of range and gigantic proportions, nothing of the kind, in the manner of this report, has ever before been attempted; and when the method, quality, standing and disinterestedness of the authorities is considered, it leaves nothing further to be desired. To put it mildly, the report is startling, and should be one of the most awakening sensations the farmers and fruit growers have experienced for a long time.

Flower Garden and Lawn.

FIG. 1338.—G. GANDAVENSIS, GRANGE ROUGE.

STANDARDS of beauty differ the wide world over. Types regarded as perfection in one country find but little acceptance in another. This is true not merely in regard to fair woman's kingdom, but also in the scarcely less beautiful realm of flowers. Even while general opinion may favor the rose, the lily has never been without its worshippers; and, of all the lily family, no class is now so generally cultivated and so universally admired as the gladiolus. Its cheapness, the ease with which it is grown, its adaptation to widely different conditions of climate and soil, its variety in the color, shape and disposition of its flowers, their excellent keeping qualities when cut, the length of its season in bloom—all these combine to make it the most deservedly popular flower of the day. There are many strains of this beautiful member of the lily family. The oldest and, in my opinion, still the best, are the hybrids of gandavensis. An ideal variety of this strain is said by Mr. James Kelvey,* the highest English authority, to be robust in constitution and habit, tall in growth and with broad foliage. The spike should be long, stout, erect, and closely set with flowers, at least eight or ten of which should be open at the same time. All the flowers should face in the same direction. The individual blooms should be large—not less than four inches across—and widely expanded. The petals should be broad and of good substance and finish. As to color,

* In a paper read before the Royal Horticultural Society, September 9th, 1890.

there will naturally exist a wide difference of opinion, but Mr. Kelwey's view is as follows:—"The ground color should be pure, but if containing two or more tints, the flakes should be of a deeper shade and the lines in the centre of the petals should be clearly defined."

Grand Rouge, the variety figured above, in almost all respects conforms to Mr. Kevley's standard, while it surpasses it in others. The petals are not as broad toward the tips as in some of the later varieties. Otherwise *Grand Rouge* represents the best types of G. gandavensis. The flower is a clear bright scarlet, with small violet blotches in the throat. It is an old variety, but one of the very best, and can be bought for a few cents per bulb.

FIG. 1339.—
G. nanceianus, Simon Lorenz. G. Lemoinei, Incendiary. G. Childsi, Henry Gillman.

In France a different type is admired, and two other forms widely different from the first, and from each other, have become very popular. They are known as *G. Lemoinei* and *G. nanceianus*. The former is hardy in climates scarcely less severe than ours. The stalk is thin, and as growth is very rapid, it is disposed to bend with its own weight. The plants accordingly require to be staked as soon as the spikes show and should be tied anew every day or two. It is seldom that more than seven or eight blooms are open at the same time. The flowers are smaller than in the gandavensis section, less closely set on the stalk, and not so widely expanded. Their coloring is however more vivid, abounding in strong contrasts. They run the entire chromatic scale from white to deep purple and violet, with large spots —usually darker than the main color— on the lower petals.

The variety, *Incendiary*, shown in the centre of the figure, is one of the largest and most brilliantly colored forms. *G. Lemoinei* multiply rapidly, and varieties only a few years introduced may be purchased at a very low price.

G nanceianus is a race of daily increasing popularity. The French and German growers, and latterly, the English, are producing great numbers of new varieties, which have all the beauty of coloring of *Lemoinei*, while they greatly exceed that strain in the size of their individual flowers. The two upper sepals are usually very long and broad, but the flowers lack the substance of *Lemoinei*. The spikes of both strains have a lightness and grace which make a pleasing contrast with the somewhat stiff arrangement of the flowers of the gandavensis hybrids.

The variety figured is of German origin, but it is not truly typical of the strain.

The variety of G. Childsi shown is fairly representative of the class. The plants are strong growers, the spike is stout and rigid, and well set with numerous large flowers, but few of which however are open at the same time. The older forms are chiefly shades of red, and are wanting in variety. Recently however many new colors, including whites and blues, have been introduced. A defect which this strain shares in common with *nanceianus* is, that the petals are thin, and they do not accordingly stand the great heat of our summer sun. In time, doubtless, varieties will be selected which will be of better substance and finish. If the spikes are cut when the first flowers open, they will last almost as long as the more substantial *Lemoinei*. A bouquet of the four strains, arranged with due regard to color and form of flower and spike, cannot be excelled in beauty. The large flowering gladiolus still lacks odor, but considering the progress made in hybridizing and the possibility of introducing odor through *G. blandus*, it is not too much to hope that the future has in store for the lovers of the gladiolus, varieties which shall rival the rose in sweetness, as they now rival it in form and color.

F. R. LATCHFORD.

Ottawa, Feb. 22,, 1898.

WHY I GROW THE GLADIOLUS.

SIR,—Having wished for some time to explain my interest in the Gladiolus, I beg to write to you from a strictly amateur standpoint, with the hope that I may touch a sympathetic cord among some of your many readers.

You are aware that I am not a florist or a gardener—but a business man. From early childhood I have had a love for horticulture in all its branches, and few amateurs have devoted more time and money in the material aspect of work and in gaining experience.

While my interest in the Canna is on account of its value as a bedder in tropical decoration, the gladiolus appeals to me in a way no other flower can, on account of its wonderful beauty and limitless variation in form and color. Imagine varieties of distinct character by tens of thousands, no dull monotony here, but endless variation and ever increasing beauty in coloring, and improvement in quality.

At our annual meetings I have felt the necessity for restraint in depicting the present condition and future possibility of this flower, for unless my hearers have had more than average experience it is not possible to make the desired impression.

My reason for urging cultivation as a cut flower is, that owing to periodic unfavorable weather conditions the flower can never be developed in all its beauty and quality in the open ground, where it must be grown. Then when bloomed in the house the spikes last longer by many days.

Speaking of its durability as a cut flower, I claim that on this point it is only excelled by the Orchid, but in exquisite beauty and combination of color this rare flower has its most succesful rival. As Orchids are impossible excepting under special and artificial conditions, and before they become the people's flower, the Gladiolus will have

so improved under the refining influence of scientific selection, as to make it the most desirable flower, even if both could be produced with equal simplicity of culture.

My reason for this statement is : that if from the comparatively few species used in the production of our hybrid Gladioli we have seen developed such marvels of beauty, and more within the past five years than in the preceding fifty, it is not unreasonable to expect an even more rapid proportionate increase in beauty and variation in the future, not only from the results of close selection from these perfected hybrids, but through the many newly discovered species yearly increased by botanical exploration, each bearing such special and distinct characteristics as to give greater promise for the future.

When first I became interested in the flower and purchased my amateur supply by the thousand, it seemed desirable to select the most beautiful ones and discard inferior sorts—so I began my first selected mixtures. During the long and dreary winter I cheered myself with thoughts of the pleasure awaiting me, but when the "selected" bloomed I concluded that a mistake had been made, for I could never have thought such flowers worthy of perpetuation. Of course I wanted to know the reason for the non-appearance of my favorites, and found this inability to reproduce characteristic flowers due to lack of vitality and fixity, caused by the self fertilization of a long in-bred and degenerated parentage.

Hybridizing and cross-breeding of selected varieties being the only path to my ideal, I gathered the best material obtainable and commenced work, and so absorbing and interesting has it become, that I never expect to abandon it entirely.

As a flower for amateurs the Gladiolus demands a first place on account of ease of culture, unequalled range of color and variation, and general adaptability for home, cemetery, and church decoration. Few flowers cover the whole range of color equal to the Gladiolus, and when fixed types are secured they can be reproduced year after year without loss.

Horticultural societies are justified in giving them prominence, but they may never hope to understand the flower, by always buying low grade and low priced stock. I cannot do it—and advise societies to advance the quality of their selections each year, for they will never secure more than fair stock at best, in comparison with the gems obtainable.

On one occasion in reply to an enquiry made by me, a society said, "We bought Gladioli last year," as though one, or even ten purchases of yearly advanced quality in low grade stock, would do more than give a glimpse of the true character and value of a flower that has been so recently improved.

This year a lady writing from Central York, asked me to exclude certain hybrids from her collection, saying, "I just hate them." Fancy beautiful and refined woman hating a flower—but her experience had not extended beyond the earlier hybrids of a section which excels the whole group in form, size, substance, quality, beauty, and range of color.

A large dealer last year expressed his objection to the form and size of a certain section, and was surprised to learn, that not only was the form referred to out of date in this section ; but was the largest and best formed flower bloomed by me in contrast to the world's best and latest introductions in that season, was of this condemned family.

I simply give these instances in sup-

Fig. 1340.—Mr. H. H. Groff.

port of my contention, that this flower, beautiful and popular as it is, is practically unknown to the amateur, the trade, and the average grower.

Societies should secure as object lessons of the effect of scientific selection in horticulture, small collections of higher quality, in preference to large quantities of material utterly failing to represent the improved condition of the flower to day.

Simcoe. H. H. Groff.

Gladiolus.—The most attractive of all summer flowering bulbs are the gladioli. Wonderful improvements have been made in recent years in the size and beauty of these flowers. Their cultivation is very simple, as they will thrive in any ordinary garden soil. Plant six inches apart, in beds or double rows, and three inches deep.

CANNAS.

ONLY a few years ago they were grown only for their foliage, which was magnificent, but the flowers were small and not showy. But lately every year has with it brought new and splendid varieties, not only in leaf but in flowers that are simply grand. And as cannas are one of the few flowers that make a good display from the time planted (1st of June) till the frost destroys them, and as the bulbs can be kept in the cellar if taken up with a little earth and given a little water in the spring, and then only if seen to shrivel up, it makes them a cheap flower after the first year. They like well enriched soil and plenty of water for the best results.

I have always been on the out look for the best to be had, and will give a list of the ten best I have had, or seen in their order after its kind. In gilt edges with scarlet centers is Queen Charlotte, 32 ft., and Madam Crozy, 32. In crimson, Alphonse Bouvier, 5 ft., a great flowerer. Charles Henderson, 3 ft., Flamingo, 3 ft., which has perhaps the best flower, but the foliage seems to be less healthy than the others. In yellow with bright marks is Florence Vaughan, 5 feet, will please everybody. In vermillion is Chicago, 4 ft., and Sophia Buckner, 5 ft., two grand flowers. In dark foliage, I. D. Cabos and Egandale, 4 ft., two bright flowers. Two that will not give satisfaction, though they get great praise, is Italia and Austria They have flowers as large as described, but have no substance and two days' sun burns them up, though as each petal comes out it will give a fresh flower, but two petals will seldom be able to get out at once, but the foliage is grand and is a great grower.

Wm. Duncan,

Hamilton. *City Gardener.*

⁂ Doings of Other Societies. ⁂

ORILLIA. The Horticultural Society here has issued a circular providing for a new departure. This Society has been long working on the old lines, and not wishing to discontinue the prize system at its exhibition now proposes two classes of members, viz., (1) those paying $1.00 who shall be entitled to entry of articles for prizes, and free admission to exhibition, and (2) those paying $1.50 who in addition shall be made members of the Ontario Fruit Growers' Association, receive the journal and plant given by it, and in addition one dozen flowering bulbs from the Orillia Society.

MR. ALEXANDER MCNEILL, of Windsor is lecturing to eighteen of our societies, taking more especially those East of Toronto. He writes:

"The Picton meeting came off in good shape and had, perhaps, 150 people present. I gave them "The Possibilities of a Town Lot," and "Flowers, Their Forms and Functions," illustrated with a splendid chart belonging to the late Prof. Panton. It makes a very interesting talk, which I gave again last night at Iroquois, with every evidence of attention on the part of the audience. The Napanee meeting was well attended. The secretary has some most willing assistants in the persons of Mrs. Wilkison, Mrs. McGill, Mr. Symington, Mr. Herrington and others. The hall was neatly decorated during the afternoon by the ladies and gentlemen, with flowers, draperies, rugs, etc., so that it looked most inviting for the evening meeting. We had an oil lantern but it was not a success.

Our new pictures are all right for a calcium light but the details are not developed at all with an oil lamp. My insert slides were better. The Iroquois officers are "all right." The Secretary has a home on the bank of the St. Lawrence, very beautifully situated and which he is very anxious to plant for the best effect. The President is Mr. Whitney, our new Director for this district, a very fine old gentleman, likely to be of use on our Board.

I urged Mr. Ross, of Picton to prepare a paper for the HORTICULTURIST, on his experience with some of the common exotics when treated as window or house plants. He has a good collection, many of them in good shape.

I enclose in a separate envelope some of the questions put in the "drawer" at Picton and Napanee.

GRIMSBY. The following is the list of plants to be given each member of the Grimsby Horticultural Society on paying his subscription for 1898:

1 Genista	20c
1 Rudbeckia	20c
1 Swainsonia	20c
1 Hydrangea paniculata	25c
1 Peony	30c
1 Heliotrope	10c
1 Dwarf Salvia	10c
1 Lilium Auratum	25c
1 Gladiolus	10c
1 Packet, Sweet Peas	5c
	$1 75

WOODSTOCK.—The Secretary of this Society has sent out the following circular, dated 16th February:

At the monthly meeting of the Woodstock Horticultural Society held last night it was decided to distribute to its members, who have paid their annual subscription of $1 to the Treasurer for 1898, on or before March 15th, the following premiums: THE CANADIAN HORTICULTURIST and its premium; also 4 bulbs "Groffs" new Hybrid Cannas 1898; cherry tree (Windsor); peach tree (Elberta); hydrangea, plant for pot culture; 1 oz Eckford's new large flower sweet peas; 1 pkt. mixed Victoria aster or other good sorts; 1 pkt. stocks, large flower, 10 weeks mixed; 1 pkt. phlox, large flower, mixed; 1 new Japanese morning glory; 1 pkt. pansies, English, large flower, mixed; also 4 pkts. of good common annuals not generally grown.

WOODSTOCK. — The Woodstock Horticultural Society is a live organization which is doing much to create an interest in floriculture and other branches of horticulture. The meeting in the council chamber last night was attended by upwards of a hundred, and included a few ladies who took a lively interest in the proceedings.

The greater part of the evening was given up to a paper prepared and read by William Gammage, florist, of London, on "house and bedding plants." The paper showed a thorough grasp of the subject, and contained many useful hints to those engaged in the culture of flowers. Among the plants dealt with were the decorative, flowering, bulbs and bedding classes. The speaker spoke of flowers as having an ennobling and elevating influence. Every home should have a win-

dow set apart for their cultivation. This window should be the largest in the house and facing the sunny side, with lots of ventilation.

The paper was listened to with close attention and Mr. Gammage was accorded a hearty vote of thanks at the close. Many of those present showed their interest in floriculture by questioning Mr. Gammage, which elicited additional information. The membership of the society now numbers about 95.

T. H. Parker presided in the absence of the president.

BRAMPTON HORTICULTURAL SOCIETY.—This Society held a meeting in the Town Hall at 8 p.m., on March 17th, 1898, for the purpose of hearing the lecture delivered by Mr. McNeil of the Fruit Growers' Association of Ontario. There was quite a big turnout, the number being about 300, who gave the lecturer a very hearty reception. The lecture was a very instructive and very interesting one, and the question drawer which followed was a large one and brought forth replies that were practical, and no doubt will be acted upon with advantage. The chair was occupied by the mayor of the town, E. H. Crandell, Esq., who was introduced by Dr. C. Y. Moore, the president of the Society. The music was rendered by the Brampton Orchestra, under the able leadership of Dr. French, one of the directors of the Society.

The beautiful flowers which graced the platform were given by Messrs. Dale and Jennings, florists and members of the Association, the flowers being distributed to the ladies after the lecture by the Secretary and Mr. F. Dale.

After a most enjoyable evening the company dispersed at 10.30 o'clock.

H. ROBERTS, *Sec.*

LINDSAY.—The lecture given by Mr. W. McNeil, of Windsor, last Wednesday evening, under the auspices of the Horticultural Society, was very largely attended and was extremely interesting. In opening he alluded to the growing importance of horticultural societies and the good work they are accomplishing all over the Dominion. In the first part of his lecture Mr. McNeil dwelt upon plants and flowers, giving many interesting particulars of the habits, functions and peculiarities, and explained very clearly nature's plans for perpetuating their species, birds, bees and moths being made unconscious agents for carrying the pollen. By means of a large chart Mr. McNeill made his meaning very clear to the audience. Proceeding, the lecturer gave hints for the successful growing of plants, and described some of their common enemies and the remedies to be applied. A number of the views illustrating the decoration of home grounds were then thrown on canvas by Mr. W. H. Stevens, of the Collegiate Institute, Mr. McNeill giving many valuable hints regarding the best method of treatment. Fruit trees infested with the San Jose Scale were also shown, and a brief history of the pest given. The final series of views represented insects destructive to plants, and the lecturer stated that nearly all bright, metallic-colored insects should be spared, as they devoured great quantities of the hurtful kinds in the larval stage.

PICTON.—I enclose you an article from the Picton Gazette, with reference to Mr. McNeil's lecture here on Tuesday evening last. We had a very good meeting, in fact, we had to bring in extra chairs, so the attendance was larger than we expected, the lecture was interesting and instructive, and all seemed to enjoy it. I think these lectures are a benefit to a Society, and will have the effect of increasing the interest in horticulture.

Yours truly,

WALTER F. ROSS.

Mr. Alex. McNeil, of Windsor, Ont., gave an interesting talk to the members of the Picton Horticultural Society, in Shire Hall, on Tuesday evening. The lecturer discussed the subject of the fertilization and cross fertilization of flowers in an entertaining manner, and talked upon the "Possibilities of a Town Lot," showing what could be accomplished by superior cultivation. He was accorded a hearty vote of thanks. Mr. J. Roland Brown occupied the chair.

ORILLIA.—The Horticultural Society has completed arrangements for holding its projected public meeting on the evening of Thursday the 24th inst. Prof. Hutt, B. S. A., Agricultural College, Guelph, will deliver a lecture on window gardening and out-door garden work for ladies. Mr. J. C. Morgan, M.A., has also kindly promised his services, and will deliver an address on Horticultural topics. Mr. G. C. Caston will be present as representative of the Fruit Growers' Association of Ontario, and he will be competent to speak from the fruit growers' stand point. The Opera House has been engaged for the occasion, and a musical programme is in preparation. A most pleasant and profitable evening is anticipated. Everybody is welcome to attend, and all are invited. No admission fee will be charged. It is to be hoped that everyone who can possibly do so will be present, and thus indicate their appreciation of the efforts put forth by the Orillia Society to increase public interest in the various branches of horticulture. The gallery will be reserved for ladies and their escorts.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter or Post-Office Order are at our risk. Receipts will be acknowledged upon the Address Label.

ADVERTISING RATES quoted on application. Circulation, 5,000 copies per month.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

Notes and Comments.

MR. GEO. E. FISHER, of Burlington, has been appointed Inspector of Orchards in the Niagara District; more especially with a view of guarding against the San Jose Scale.

GAULT RASPBERRY.—Owing to the prohibition of American stock, we cannot get the Gault raspberry for our plant distribution, but will substitute the *Older*, a variety probably equally good.

PRODUCERS OF EVAPORATED FRUIT should send their names and addresses, with circulars, etc., to Mr. H. Watson, Imperial Institute, London, S. W. England, who is receiving enquiries for names of Canadian exporters of such goods.

SWEET POTATOES in Canada. We have an interesting article on this subject for May number, by Mr. Leadbeater, of Woodstock. He shows that these can be successfully and profitably grown. The plants need to be obtained between May 1st and June 1st.

THE GRIMSBY HORTICULTURAL SOCIETY will distribute one each of the following plants to their paid members this spring, viz.: Senista, Rubbeckie golden pod, Swainsonia, hydrangea, peony, heliotrope, Dwarf Salvia, Lilium auratum, gladiolus, sweet peas. Arrangements are being made for an address on flowers from Wm. Bacon, of Orillia, on the 28th inst.

THE vacancy in the staff at the Central Experimental Farm, caused by the resignation of Mr. John Craig, the late Horticulturist, has been filled by the appointment of Mr. W. T. Macoun to that position.

Mr. Macoun, who is a son of Professor John Macoun, Dominion Botanist and Naturalist, was born in 1869, at the city of Belleville. He attended the Central school there until 1882, when he removed to Ottawa with his father, where his education was further continued at the Ottawa Collegiate Institute.

During the summer of 1883, 1884, 1885 and 1887, he acted as his father's assistant in his botanical and biological researches and travelled through parts of Nova Scotia, Northern Ontario, the North-West Territories, and British Columbia. Having concluded his preparatory studies, he obtained employment in 1888, at the Central Experimental Farm, where he has been ever since.

After the resignation of the former Horticulturist, Mr. W. W. Hilborn, in the winter of 1888 and 1889 Mr. Macoun assisted the Director in carrying on the work of the Horticulturist during the following spring and summer. He was continued in this work until the appointment of Mr. John Craig in 1890, and at that time paid special attention to the study of varieties of fruit. Since 1889 Mr. Macoun has had charge of a large proportion of the agricultural experimental work on the farm. During the autumn of 1892 he went to Europe and visited some of the more important institutions there, where experimental work is being done, particularly Rothamstead, established by Sir John Lawes; the Royal Agricultural Society's Experiment Grounds, Woburn Sands, and the trial grounds of Henry Vilmorin, Esq., of Paris. In 1893 he was appointed as Assistant to the Director, and Foreman of Forestry, and since that time has carried on the work of the forestry belts and on the ornamental grounds. In 1896, at the request of Dr. Fletcher, who has hitherto managed this part of the work, Mr. Macoun was placed in charge of the Arboretum and Botanic Garden.

The reports prepared by Mr. Macoun, concerning the branches of the work carried on under his charge—which were included in the report of the Director during the years 1893, 1894, 1895 and 1896—give evidence of much careful work and are very creditable to the author.

Mr. Macoun has been of great assistance to the Director in carrying on the work of the cross-fertilization of cereals and fruits, and many of the more promising varieties now under trial are the result of his careful work.

An Inspection bill is now before the House of Commons of Canada, providing for the addition of a paragraph providing for the inspection of fruit. This paragraph requires all fruit packages to be marked with the name of the kind of fruit, the grade, the name of the packer, whether grower or shipping. The qualities are to be graded 1, 2, 3, 4 and culls. The inspector is to inspect five packages, or more, and if according to brand, he will consider the lots so represented as duly inspected; but if the fruit in any of the packages does not correspond with the marks, then he shall confiscate it.

This bill is no doubt on the right track; for it is quite time that some steps were taken to prevent fraudulent packing. We do not believe the blame of this all rests with the growers; it rests more probably with those shippers who buy No. 2 or No. 3 fruit in bulk, face it up with good, and then sell it for No. 1. We understand that these men are opposed to the bill, and no wonder. We do not hear of any growers objecting.

The only criticism we have is the useless number of grades. Surely No. 1, No. 2 and culls should be grades enough for anybody.

A LARGE NUMBER OF FRUIT GROWERS met at Grimsby on the 12th of March, to discuss freight rates, and the best methods of packing and shipping fruit. There were two Commission Merchants present, viz., J. T. McBride, of Montreal, and G. N. Hunt, of Ottawa, whose addresses were closely listened to. They advocated more careful handling, better grading, and better packing of our tender fruits; and the shipping in refrigerator car lots to save freight.

POSSIBILITIES OF AGRICULTURE in the Yukon District is the title of a recent bulletin issued from the Experimental Farm, Ottawa, prepared by the Director. As stated by him, "With the comparatively low temperatures all through the summer, the prevalence of frost during the early part of June, and again before the end of August, which shortens the growing season at both ends, there seems to be no prospect of ever being much done in the way of agriculture in such a climate." The bulletin proceeds to give a list of fodder crops and vegetables which may be grown with success.

SEVERAL CARLOADS of American nursery stock arrived at the border on the day the San Josè Scale act was passed at Ottawa. The Minister of Customs refused them admittance. This will be serious loss to those American nurserymen who had made the sales in Canada, but of course the interests of our fruit growers generally are more important than those of a few individuals. We must stamp out and keep out this pest, lest our orchards become ruined and the best markets of the world be closed to our fruits. What would be the prospects of the Canadian fruit grower, if England and Germany, and other great markets should bar our fruits? We must have these and other new markets, or go out of the business of growing fruit.

FRUITS NOT BARRED OUT — The Dominion Act does not prohibit the importation of fruit from countries infested with San Josè scale. Our own Provincial Act makes it unlawful to import or sell such fruit, and it would be a great additional safe-guard if the Dominion Act could also have been made to include it. The following remarks on this head are from Farming.

"Recently the Ontario Fruit Growers' Association urged upon the Dominion Minister of Agriculture that the Government should prohibit the importation of foreign fruits into Canada, because of the danger from bringing in the San Josè scale. The Winnipeg Board of Trade took the matter up, and has received word from Mr. Fisher that the prohibition of the importation of foreign fruits is practically impossible. Such a prohibition would be manifestly unfair to the people of Manitoba, who depend largely upon California for fresh fruit. No pears, plums or peaches are grown in Manitoba and the North-west, and nearly every attempt to bring fruit from British Columbia or Ontario has resulted in loss, therefore the prohibition of foreign fruit coming into the country would almost deprive Manitoba of these luxuries.

GODERICH.—At the last meeting of he Goderich Horticultural Society, Mr. Wm. Warnock gave a paper on "How to use Fertilizers." He showed the importance of cultivation in connection with fertilizers, as otherwise much fertility might remain in the soil. For tomatoes he discouraged the use of stable manure as causing them to run too much to vine; he advised a fertilizer that is a complete manure, applying a handful to each plant

after setting, and then thoroughly raking in. For grape vines he advised ¾ of bone meal and ¼ of muriate of potash. For ordinary farm crops he advised 2 parts of lime and 1 part of salt, mixed with sods and left to stand three or four months. For mucky soil add bone meal and ashes.

SAN JOSÈ SCALE BILL PASSED.—Our readers will be pleased to note that the Dominion has passed the Hon. F. Fisher's bill to protect Canada against the introduction of the San Josè Scale. Notwithstanding the sweeping nature of this bill which empowers the Governor-General in Council at any time to prohibit the importation of nursery stock from any country in which the Scale is known to exist. The following is the text of the bill:

2. The importation of any trees, shrubs, plants, vines, grafts, cuttings or buds, commonly called nursery stock, from any country or place to which this Act applies is prohibited.

3. Any nursery stock so imported shall be forfeited to the Crown and be destroyed, and any person importing nursery stock from any such country or place, or causing or permitting it to be so imported, shall be deemed to be guilty of an offence under section 6 of *The Customs Tariff*, 1897, and shall be liable to the penalty prescribed by that section.

4. The Governor in Council may from time to time declare that this Act applies to any country or place as to which it has been made to appear that San Jose Scale exists therein; and, when satisfied that the importation of nursery stock from any country or place to which this Act has been applied may safely be permitted, he may in like manner declare that this Act no longer applies to such country or place.

5. The Governor in Council, upon its being made to appear to his satisfaction that any class of plants is not liable to the attack of the San Jose scale, may exempt plants of such class, and grafts, cuttings or buds thereof from the operation of this Act.

6. The Governor in Council may from time to time, notwithstanding anything contained in this Act, permit the importation from any country or place to which this Act applies of such nursery stock as is required for scientific purposes.

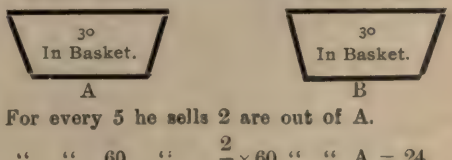
This act may seem at first to be in the interests of nurserymen, but it is equally in the interests of all fruit growers and farmers. For if once our orchards became infested with this scale, our export trade in fruit will be closed, and our fruit growers may as well dig out their orchards. Already the German ports have been closed against United States fruit on this account, and England will no doubt follow suit against all countries where orchards are known to be infested.

Our Association has done a wise thing in making a strong appeal to the Dominion for legislation.

THE APPLE PUZZLE.—We have received several correct solutions of the apple puzzle which appeared on page 114, and give place to one or two. Mr. F. T. Morson, St. Thomas, writes:

Regarding the Apple Puzzle published in March issue of the "CANADIAN HORTICULTURIST," would give my explanation as follows: calling them respectively the 2-Appleman and 3-Appleman, the 2-Appleman goes to the market and after having made 10 sales at the rate of 5 apples for 2c. the 3-Appleman's apples are all sold, while the 2-Appleman has 10 apples left and has received 20c. These remaining 10 apples, as they belong to the 2-Appleman, should have been sold at the rate of 2 for 1c., which would bring him 5c. more, thus making a total of 25c. He, however, sold remaining 10 apples at the rate of 5 or 2c., realizing 4c., making a total of 24c. The mistake being that he sold 10 of his own apples at a cheaper rate than he should have done.

ALICE M. DUDLEY, TORONTO, writes:



For every 5 he sells 2 are out of A.

" " 60 " $\frac{2}{5} \times 60$ " " A = 24

" " 5 " 3 " " B

" " 6 " $\frac{3}{5} \times 60$ " " B = 36

But there are 30 apples in A to begin with, and only 30 in B also; where did the 36 come from? and what happened the 6 when only 24 were sold out of A? The 6 out of A were counted with the apples in B; *i.e.*, instead of selling 6 at the rate of 2 for 1 cent, they were sold at the rate of 3 for 1c., which gives a difference of 1c.

APPLE PUZZLE.—Solutions have also been received from S. Spillett, Nantyre, and from Harold Ward, Napanee.

Question Drawer.

We shall be glad to answer all questions relative to Horticulture, Floriculture, and Forestry, in these columns, but cannot undertake to send answers to such questions by mail.

Apple Growing.

988. SIR,—I am going into the growing of small fruits and apples. I have six acres of high level land for the apple—high level land, sandy loam, sandy subsoil. People tell me trees will do well for three or four years, then gradually die of starvation. Now if well fed from top manure, and sowing peas and clover, and plowing under, I think they should flourish. Kindly give your views. What varieties of winter apples would you advise me to plant? The thermometer sometimes goes down to 20° below zero.

J. L. LAIDLEY, *Omemee.*

No doubt the local experience is quite correct, that in such a soil, without the addition of much manure, or any special cultivation, apples would soon starve. But if moist and well drained, such soil might be suitable for an apple orchard, under certain treatment. A liberal annual application of wood ashes—about 50 bushels to the acre would have an excellent effect, not only supplying the needed potash, but also, tending to give greater compactness to the sand. This with plenty of barn manure, and ploughing under a leguminous crop should give success in apple growing.

As to varieties of winter apples, we can only suggest, for actual experiment is the only final means of answering the question. The following are excellent and probably hardy enough: Blenheim, Snow, MacIntosh, Wealthy, Ben Davis.

Ashes.

989. SIR,—Are ashes worth three cents a bushel good as a fertilizer for red and black cap raspberries, and are they good to use around trees and strawberries on sandy loam?

J. L. L.

Yes, they are worth 25 cents a bushel for sandy soil for any kind of fruit crop. At the price mentioned by enquirer, no cheaper or better fertilizer could be purchased for sandy soil. On clay soils, however, ashes are objectionable, tending to make the soil more tenacious.

Carnations in Ontario.

990. SIR,—I am desirous of obtaining information respecting the growing of carnations in Ontario more particularly the latest and newest varieties and the amount of glass employed in growing them. For this information I have been referred to you, and I shall be glad if you can give me this information. Perhaps you have articles in the past numbers of your journal which deal with the subject. Are the carnations grown here for winter flowering a separate species, or are they allied to the English Tree carnation?

D. WILLIAMSON, *Montreal.*

Reply by Prof. Hutt, O. A. C., Guelph.

The following are among some of the leading varieties of carnations, grown in commercial establishments:—white—Lizzie McGowan, Silver Spray, Ivory and Storm King; pink—Daybreak, Wm. Scott, Tidal Wave and Bridesmaid; scarlet—Portia; yellow—Goldfinch and Dean Hole; pink and white—Hellen Keller, J. J. Harrison. Many new varieties are being introduced every year, some of which will no doubt take the place of those mentioned. It would be impossible to give a close estimate of the amount of glass employed in growing carnations in Ontario. Dale, of Brampton; Dunlop, of Toronto; and Miller, of Bracondale, have several acres under glass, a large portion of which is devoted to carnation culture. The English Tree carnation and that grown here belong to the same species (Dianthus Caryophyllus Somperflorens). For a book on that subject I would refer the dealers to American Carnation Culture, by L. L. Lamborn.

Fruit Trees to Border Tennis Court.

991. SIR,—What varieties of plums, pears, cherries and early apples are best to plant on three sides of a tennis lawn, about 90 x 90 x 80 ?

E. COWDRY, *Simcoe.*

The following list would give an interesting variety; the apples 30 or 40 feet apart, and the others 15 or 20: Plums—Abundance, Bradshaw, Washington, Reine Claude. Cherries—Geo. Wood, Knights Early, Black Tartarian, Napoleon, Windsor. Pears—Giffard, Marguerite, Bartlett, Anjou. Apples—Astracan, Duchess and Wealthy.

Flowering Hedge.

992. SIR,—What would make a pretty flowering hedge? E. C.

Spiræa Van Houtti makes a wonderfully fine show of white bloom, and bears the shears well; Privet is an old stand by, but shy in bloom; Japan Quince has an abundance of red bloom in early spring; Clethra Alnifolia is fragrant.

Flowering Shrubs.

993. SIR,—Please name six uncommon flowering shrubs for a front lawn ?

E. E., *Simcoe.*

Elæagnus longipes, Exochorda grandiflora, Cotoneaster vulgaris, Hibiscus, Hydrangea paniculata grandiflora, Rhus cotinus.

Grapes for Garden Fence.

994. SIR,—Please name three varieties of grapes to grow against a trellis fence?

E. C., *Simcoe.*

Three good varieties, one of each color, would be Lady (white), Wilder (black), Lindley (red).

Diseased Plum Twigs.

995. I enclose samples of twigs of plum trees dying apparently from some disease. Can you explain ?

A SUBSCRIBER.

Reply by Mr. John Craig, Ithaca, N. Y.

The plum twigs marked with circular or oval pustular spots appear to be affected by a shot hole fungus or one closely allied such as *cercospora* or *phyllosticta.* In twigs of this kind the mycelium of the fungus is probably the only form present, and from this it is difficult to identify the species.

These leaf spot diseases injure pears and plums immensely. They may be prevented by spraying with Bordeaux mixture.

Pear Twigs Injured.

996. SIR,—I have a few trees of dwarf pears marked like the enclosed, is this the San José Scale? If you will kindly reply you will oblige me, for if it is the scale I will burn the trees affected.

G. H. STANFORD, *Hamilton.*

Reply by Mr. John Craig, Ithaca, N. Y.

The pear twigs are not affected by San Jose Scale. The small swellings on the bark does not seem to be due to a fungus, these swellings are merely a deposition of corky tissue caused by some form of mechanical injury.

Larger specimens should accompany an inquiry of this kind.

Sacred Lily (so called).

Reply to Question 975.

With reference to Mr. John S. Landus enquiry, and Messrs. Webster Bros. reply.—If planted in the ground like any other "Polyanthus Narcissus" it does perfectly well and may be left to bloom year after year but when it blooms in water the bulbs become exhausted and had better be thrown away.

J. R. ANDERSON, *Victoria, B. C.*

Farmers Institute Report.

997. SIR,—Where and how may I obtain a copy of the Farmers Institute Report of Ontario.

HERBERT, *Ottawa.*

Write F. W. Hodson, Parliament Buildings, Toronto.

Black Currants Not Productive.

Reply to Question 978.

If Mr. Collins will try mulching his black currants, instead of cultivation in the early part of the season I think he will have better results. As soon as the fruit is picked the mulch may be removed, and cultivation resorted to for a short time. I prefer to apply mulch in the fall.

STANLEY SPILLETT.

Roses and Red Spider.

998. SIR,—Your letter replying to my enquiry regarding the culture of pot roses was duly received, and I thank you for the the information contained therein.

In February the plants commenced to grow nicely and one is now coming into bloom. I find the leaves dropping, however, and there appears to be some insect at work. I enclose samples of the infested leaves. The insect is very tiny, looking like a small white dot and always appears to be under the leaf. I shower the plants daily with clear water and occasionally with soap-suds. In watering them, I put a teaspoonful of ammonia to a quart of water, about once a week. I am a great lover of roses and desire to succeed with them, and if you can tell me how to exterminate the insect that is troubling them, I shall be greatly obliged.

(MRS.) B. KELLY.

Reply by Prof. H. L. Hutt, O. A. C., Guelph.

The destructive little insect at work upon your rose is the red spider, a pest much more common upon house plants than is generally supposed. To the casual observer his work may be apparent in the yellow leaf and sickly appearance of the plant, but it is only by close inspection that the tiny little spiders are seen, unless they become very plentiful, when their small webs on the under side of the leaves betray their presence. The warm dry atmosphere of most dwelling houses is just what the red spider delights in, and is what is most trying upon house plants. The atmosphere should be kept as moist as possible by means of water evaporating on the stove or furnace.

The best way to get rid and keep plants free from red spider is to syringe them daily with water, forcing it well up under the leaves. Showering it on from above will not be effective, as the spider works mostly on the under side of the leaf. If the syringing cannot be conveniently done, dip the plants frequently until the spiders take their departure.

Strawberry Rust or Leaf Blight.

999. SIR, — When is the best time to spray and what should be used to prevent it? and how much liquid is needed per acre?

T. H. ALTON, *Woodbank.*

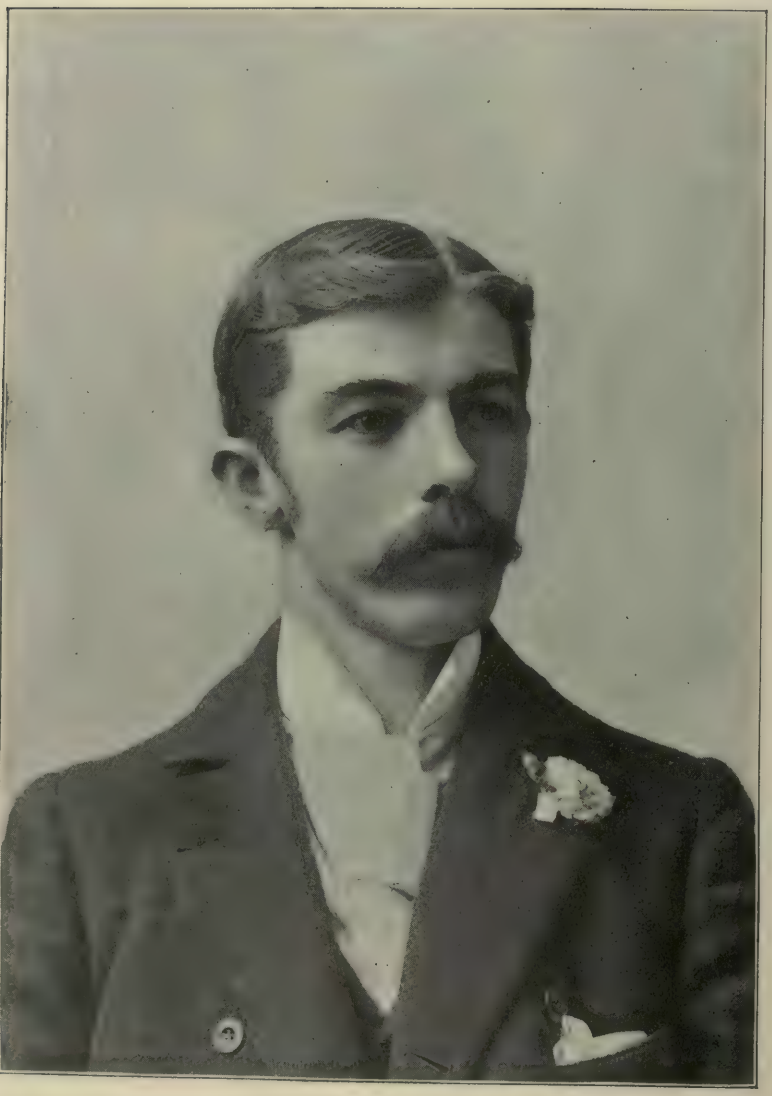
Spray with Bordeaux mixture after first blossoms fall, repeat after picking season, and again about two weeks later —or, instead of second and third sprayings, burn foliage. The quantity of Bordeaux per acre would depend upon fineness of spray; probably from 60 to 80 gallons.

Raspberry Plants.

1000. SIR,—Should raspberries be dug up in the fall and trenched, or dug up in the spring, when time to plant?

T. H. ALTON, *Woodbank.*

Either plan will do, but the first is preferable for yearling plants. Many wait for the young red raspberry shoots that come up in May, and plant them as they would tomato plants, and with good success.



PROFESSOR H. L. HUTT, O. A. C., GUELPH.

THE
CANADIAN HORTICULTURIST.

VOL. XXI. TORONTO, 1898. MAY, NO. 5

STRAWBERRY TESTS AT GUELPH.

ABOUT a year ago, we gave our readers a sketch of Professor Hutt's work at the Agricultural College, and his preparation for it. We are now enabled to give a fine full page picture of him, and at the same time some extracts from his last report on Strawberries, with the engravings made from photographs, all of which appeared in the last College Report, just sent out by the Department of Agriculture.

TEST OF VARIETIES OF STRAWBERRIES.

For the past two years we have been testing varieties of Strawberries. In last year's report the results are given of a trial of 121 of these. This year we had 150 varieties in fruiting, and have added eighty to our collection to fruit next year. The results with many of these during the past two years have shown them to be of little or no value, and if next season's yields confirm these results such varieties will be placed on our discarded list. On the other hand, a number have made excellent records for both seasons, and if, after repeated trials, these records are maintained, such varieties may with confidence be recommended to intending planters.

The treatment given in these experiments may be briefly outlined as follows: The ground on which the strawberries were planted was cropped the previous season with onions, beets and carrots, during which time it was kept as free as possible of weeds. It was plowed in the fall after the removal of these crops, and top-dressed during the winter with short, barnyard manure. As soon as the land was fit to work in the spring it was

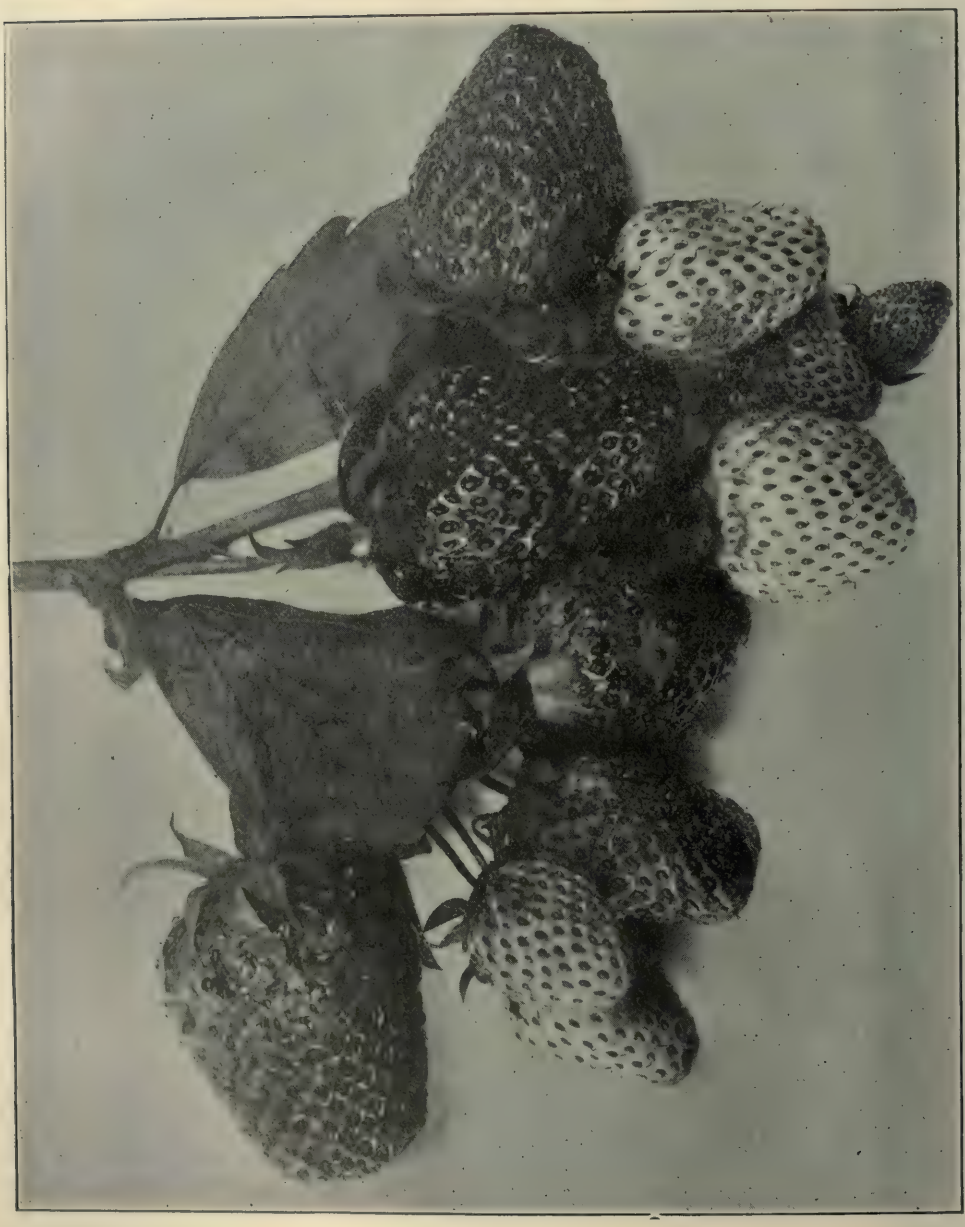


FIG. 1341.—HAVERLAND.

plowed again, and put in as fine condition as possible with the harrow and roller. The rows were then marked out four feet apart, and cross marked with a fifteen-inch hand-marker. Twelve plants of each variety were planted, each variety thus being given fifteen feet of a row. A space of thirty inches was left between the different varieties in the same row, to avoid any mixing of runners.

Those of the plants that were of our own growing were taken from the plantation set out the year before, which had not yet borne fruit. Such plants are much more vigorous and thrifty than plants taken from old plantations which has fruited for one or more seasons.

The planting was done by means of a spade, which was thrust deeply into the ground and then pressed backwards and forwards. Into the cleft thus made the roots were spread out fan-shaped by a quick slapping motion, and the soil packed firmly about them by the feet of the planters. As soon as possible after planting the surface soil was loosened with the horse cultivator and hand hoes, and thorough cultivation was given through the season.

All blossoms were picked off the first season, so that the plants were not allowed to exhaust themselves in the production of fruit. All runners were allowed to set, forming wide matted rows, but each variety was confined to its own fifteen feet of row.

After the ground had frozen hard in the fall it was lightly covered with long strawy manure, which helped to hold the snow, and protected the plants from injury early in the spring by preventing their alternate freezing and thawing. When growth had commenced in the spring, this covering was racked off the plants and left as a mulch between the rows. This not being heavy enough to keep down the weeds and properly conserve the soil moisture, an additional heavy mulch of coarse grass was put on before the fruit began to ripen. This kept the berries clean and retained the soil moisture while the crop was ripening.

Owing to the cold spring the plants came into bloom about two weeks later this year than last; yet, notwithstanding the lateness of the bloom, many of the first blossoms were blackened by the repeated late spring frosts. But this did not so seriously affect the crop as the extremely hot dry weather about the middle of the fruiting season in July. The showers following, however, prolonged the fruiting on those varieties which were hardy enough to withstand the effects of the preceding drought.

In the following tabular statements the varieties under the test are ranked in the order of their yield. In some cases all of the plants set did not live; where only one or two failed, this would not materially alter their yields, particularly in the case of the free running varieties, as their runners filled the fifteen feet of row alloted to them. The greatest number of failures were among the newly added varieties which came from a distance. Many of these will, no doubt, make a better record next year, when their yield will be from plants of our own growing. The number of plants which lived is mentioned for each variety, so that allowance may be made for some good varieties, which, on account of the failure of some of the plants, stand low on the list.

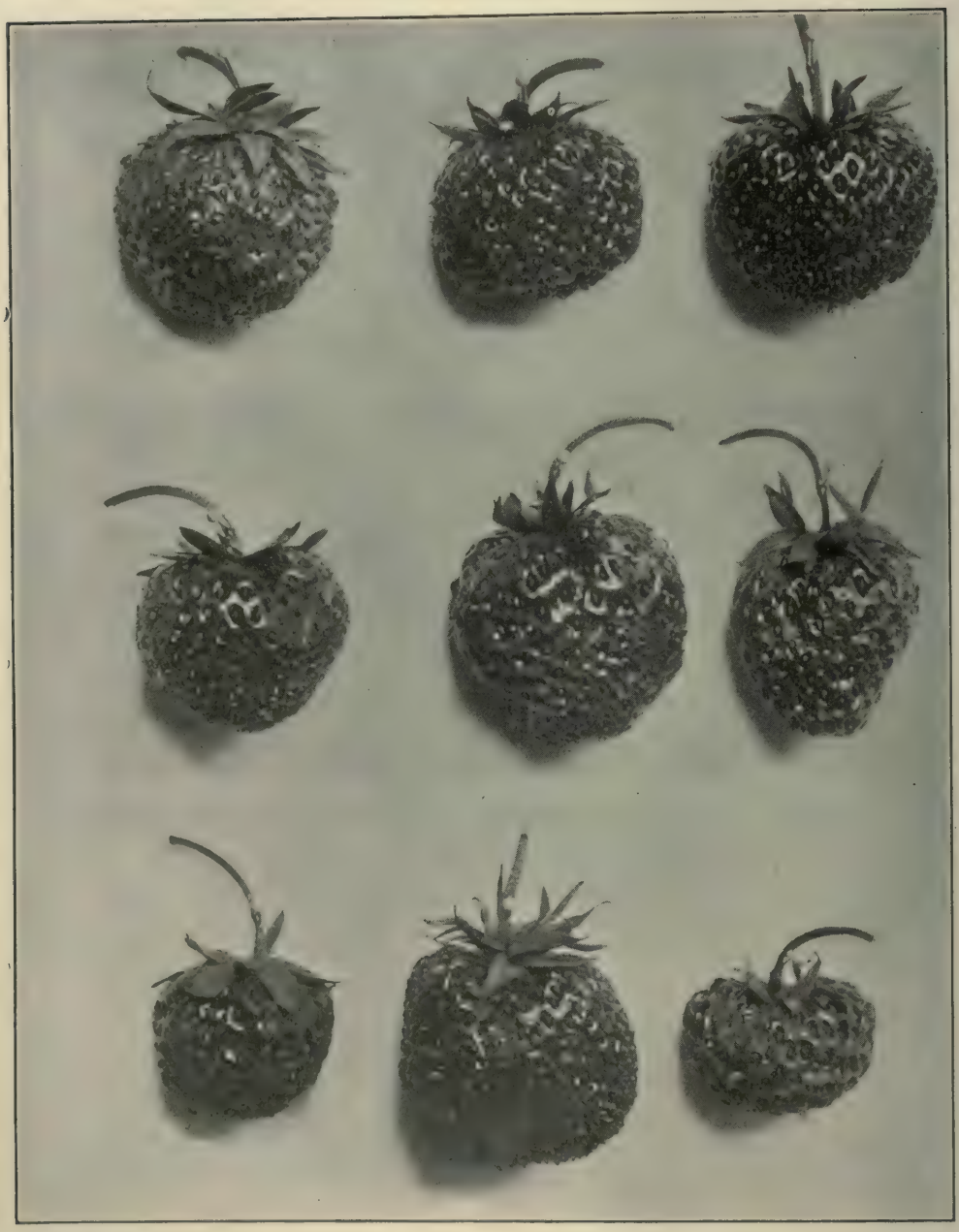


FIG. 1342.— OHIO CENTENIAL. EDGAR QUEEN. AROMA.
HATCH EXPERIMENTAL STATION. MRS. CLEVELAND. DR. ARP.
PRINCETON CHIEF. NO NAME. KLICKITA.

STRAWBERRY TESTS AT GUELPH.

EXTRACTS FROM PROFESSOR HUTT'S TABULAR STATEMENT.

Rank.	Rank in 1896.	Varieties.	Sex { B. bi-sexual. P. pistillate.	Number of plants lived	Vigor of growth—scale 1-10.	Freedom from rust—scale 1-10.	Date of first bloom.	Date of first picking.	Date of last picking.	Yield.	Firmness.	Color.	Weight of 50 average berries.
									July.	ounces.			ounces
1	33	Tennessee Prolific..	B	12	10	9	May 21...	June 26..	17	281.00	F	C	13.00
2	13	Stone's Early	P	12	10	10	" 21...	July 1...	14	263.75	M	S	6.25
3	8	Saunders	B	12	10	6	June 2...	" 1...	20	261.00	F	D C	11.25
5	52	Woolverton..	B	12	9	9	May 25...	" 1...	20	240.00	M	C	16.00
6	45	Shuster's Gem.....	P	12	9	5	" 18...	June 26...	20	234.00	F	D C	10.75
7	....	Wm. Belt.....	B	12	10	7	" 24...	" 28...	20	232.25	F	D R	13.25
8	10	Haverland	P	12	10	9	" 18...	" 23...	20	232.00	M	L S	12 00
9	....	Ruby.....	B	11	10	7	" 21...	" 26...	22	229.75	F	D C	14.25
10	40	Isabella..... . ..	B	12	10	5	" 23...	" 23...	17	228.25	V F	D C	11.25
11	...	Dominion	B	10	10	4	" 21...	July 3....	22	217.75	S	L S	12.00
12	47	Van Deman.... ..	B	12	8	6	" 18....	June 23.	17	214.50	F	D C	10.00
13	....	Tubbs	B	9	9	7	" 18...	" 23. .	20	210.00	F	D R	12.25
14	....	Liddle..... . .	B	9	10	9	" 25.	July 1...	20	209.75	M	L	7.50
15	26	Jocunda Improved.	B	12	9	7	" 28 ..	June 28...	17	205.00	V F	D C	10.75
16	1	Warfield.... ...	P	12	10	7	" 24...	" 26...	20	202 50	V F	D C	9.50
17	62	Aroma.....	B	12	8	10	" 27.	July 3...	20	193.25	F	D R	10.75
18	7	Barton's Eclipse...	P	11	9	5	" 18..	June 26...	20	193.00	F	B C	11.50
19	35	Prince of Berries...	B	12	9	5	" 23...	July 3...	22	192.50	M	B S	11.75
20	...	Enormous.....	P	12	10	8	" 25...	June 26 ..	20	191.75	F	C	13.75
21	37	Northern..	B	12	10	5	" 21...	July 1.	20	188.75	F	C	7.50
22	79	Judsonia	B	12	9	5	" 24...	June 26...	14	181.25	F	L S	19.75
23	....	Beebe..... ...	B	12	7	5	" 21..	July 1.	20	180.25	S	D R	10.50
24	87	Ona..	P	12	10	9	" 18...	June 26...	20	177.75	M	S	9.00
25	58	Princeton Chief....	P	12	8	6	" 24...	July 3...	22	173.00	F	C	7.75
26	15	Seedling A.....	P	11	9	5	" 21...	June 28...	20	173.00	S	L C	7.75
27	38	Enhance.....	B	12	10	7	" 18.	July 3.	20	171.00	V F	D R	7.75
28	65	Muskingum	B	12	8	8	" 25...	" 3...	20	169.75	S	L C	12.00
29	16	Lovett	B	12	10	6	" 18. .	June 23...	17	167.75	F	L S	9.75
30	....	Arrow	P	12	10	9	" 21...	" 26...	14	166.50	M	D C	8.00
31	42	Howard's 41.....	P	12	9	9	" 25..	July 3...	20	162 50	V F	S	7.75
32	39	Leader.....	B	12	10	4	" 17...	June 28...	20	162.00	M	D C	8.50
33	5	Prize.....	P	12	10	6	" 18...	" 26...	20	161.75	M	S	7 75
34	...	Phipen.....	B	5	9	8	" 24..	" 28...	20	161.50	F	B C	10.25
35	54	Ohio Centenial.....	B	11	8	9	" 21...	July 3...	22	161.50	M	L S	11.25
36	22	Belle(Crawford's51)	B	12	10	8	" 23...	" 3...	22	158.50	F	B S	9.25
37	....	Gandy Belle.....	B	10	8	3	" 18....	June 26...	12	158.25	M	D C	13.50
41	51	Bessie	B	12	7	6	" 24...	" 23...	14	154.75	F	L S	7.50
42	3	Edgar Queen... ..	P	10	10	5	" 25..	July 1...	22	154.50	S	L R	10.75
43	36	Southard.....	B	12	8	9	" 18..	June 26...	14	152.50	S	C	9.25
44	34	Splendid..... .	B	12	10	7	" 21.	July 1...	20	152.25	F	D R	10.75
45	72	Hatch Expt. Sta. 24	B	12	10	6	" 29...	" 3...	22	151.50	M	D C	12.50
46	31	Williams	B	12	10	6	June 2...	" 1...	22	151.25	F	D C	12.50
48	55	Dayton.....	B	12	10	6	May 24...	June 26...	12	150.50	S	L S	13.00
53	4	Bisel.	P	10	10	7	" 24.	" 28...	20	145.00	F	D C	9 50
56	32	Dr. Arp.....	P	12	8	4	" 25...	July 3...	22	141.25	F	D R	7.25
57	6	Standard	P	11	10	7	" 24..	" 3...	20	139.25	F	S	6.50
59	43	Rio.....	B	12	9	8	" 17..	June 23...	12	134.75	F	S	9.25
62	86	Beder Wood	B	9	7	5	" 17...	" 23.	12	132.75	F	B S	9.75
63	48	Michel's Early.....	B	12	10	6	" 14...	" 23...	12	131.00	S	L R	6.00
65	49	Cyclone	B	11	10	9	" 18..	" 26...	14	127 75	M	S	8.00
67	....	Kansas Prolific....	B	12	10	4	" 18...	" 28...	20	126.50	F	L S	5.00
69	19	Gandy.....	B	11	7	5	" 18. .	" 26...	20	125.25	S	B S	11.00
73	67	Marshall.....	B	12	8	7	" 18 ..	" 26.	20	122.75	S	D C	11.75
75	23	Gertrude	B	12	9	8	" 18. .	" 23..	14	119.75	M	L S	10.50
76	9	Mrs. Cleveland ...	P	12	9	7	" 24...	July 1. .	20	118.00	M	L S	9.75
79	74	Klickita	P	12	10	4	" 24...	" 3...	20	114.75	S	D R	6.00
81	80	Scarlet Ball.. ...	P	12	7	5	" 27...	" 5...	22	113.75	S	L R	11.25

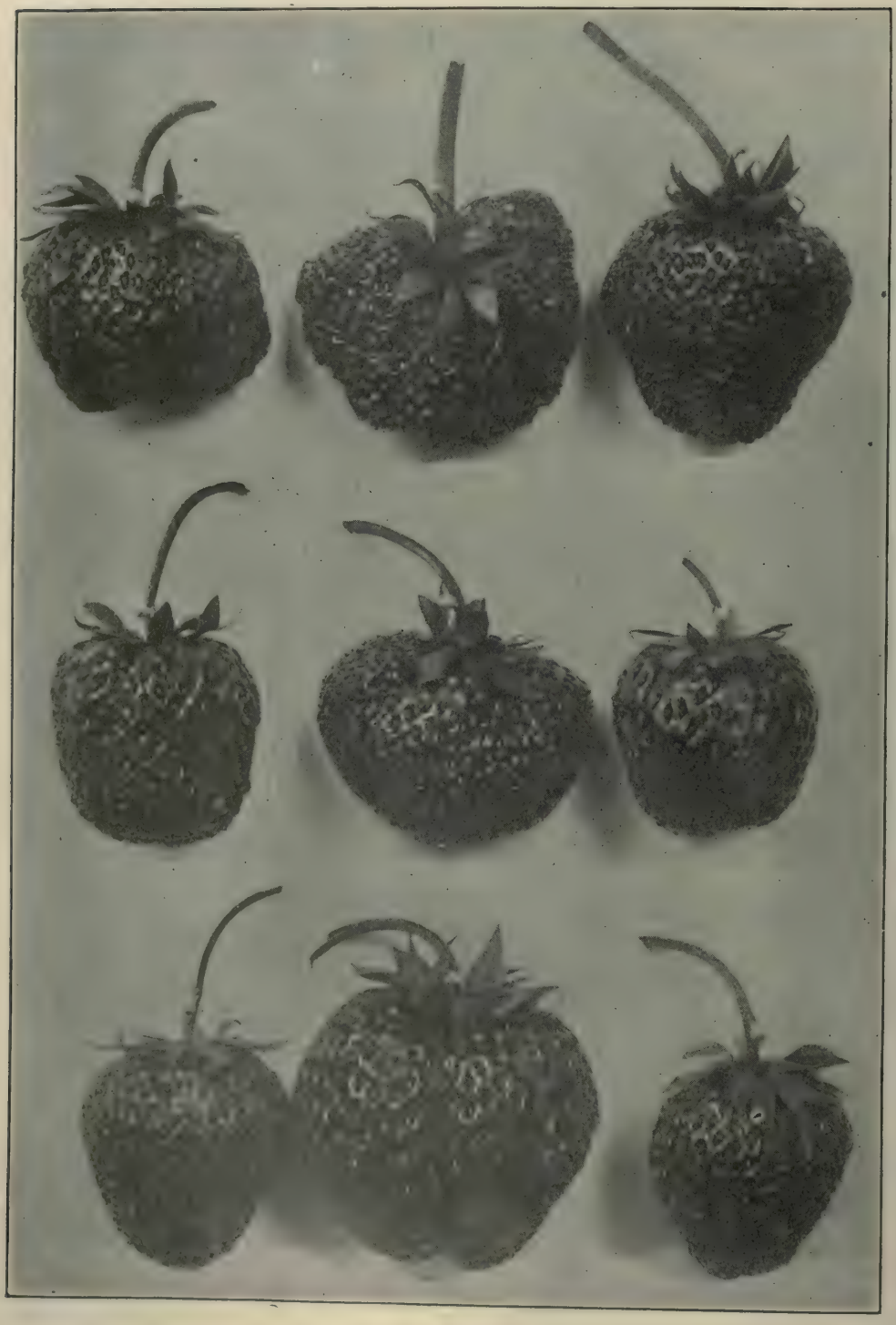


FIG. 1343.

RUBY.
GREENVILLE.
BARTON'S ECLIPSE.

WM. BELT.
SOUTHARD.
SAUNDERS.

WILLIAMS.
SHUSTER'S GEM.
JOCUNDA IMP.

VARIETIES OF STRAWBERRIES UNDER TEST.—*Continued.*

Rank.	Rank in 1896.	Varieties.	Sex { B bi-sexual. P. pistillate.	Number of plants lived.	Vigor of growth—scale 1-10.	Freedom from rust—scale 1-10.	Date of first bloom.	Date of first picking	Date of last picking.	Yield.	Firmness.	Color.	Weight of 50 average berries.
									July.	ounces.			ounces
85	61	Timbrell	P	12	8	3	May 24	July 3	20	110.25	S	G R	11.50
86	106	Anna Forrest	B	12	6	6	" 18	June 28	20	108 75	M	G R	13.50
87	....	Gillespie	B	12	7	8	" 21	" 26	14	198 25	F	L S	11.75
88	....	Jessie	B	12	8	8	" 21	" 28	20	107.25	M	D R	13.50
89	71	Beauty	B	12	6	9	" 18	" 26	12	106 50	S	B S	13.50
90	28	Crescent	P	12	10	6	" 18	" 28	14	105.50	M	S	6.50
91	73	Gov. Hoard	B	12	7	6	" 21	2 28	20	105 25	S	L S	6.00
92	90	Jersey Queen	P	12	7	6	June 3	July 3	22	104.25	S	L S	12.50
94	91	Parker Earle	B	11	7	8	May 15	June 23	12	103 75	M	D C	8.50
102	89	Oberholtzer's No. 2	P	12	10	7	June 2	July 7	22	92.50	F	L R	9.25
104	56	Lady Rusk	P	12	7	5	May 21	" 1	17	90 75	F	D C	7.75
105	11	Greenville	P	11	9	8	" 25	" 3	14	89.75	M	D R	6 50
108	....	Kossuth	B	12	10	3	" 14	June 28	12	83.50	S	D C	9.50

In column two is given the relative positions of those varieties fruited in 1896 which had a full or nearly full stand of plants. The great change in position of many of these shows very clearly how little value should be placed upon the results of but a single test. It is only by the average of a number of trials that we can arrive at a reliable estimate of the value of a variety.

By the term "vigor of growth" is meant the ability of the plant to send out runners and make a full matted row. On ordinary soils the most vigorous varieties, graded ten, might well be planted two feet apart in the row and make a full matted row.

Strawberry rust (*Sphærella fragariæ*) may be prevented or held in check by spraying with the Bordeaux mixture; but in our experimental plots the plants were not treated, our purpose being to find out the susceptibility of the different varieties to the disease. By reference to column 6 it will be seen that many of the most productive varieties are the most susceptible to it.

The date of bloom, as noted in column 8, should be carefully noted by planters who wish to select bisexual varieties to fertilize the bloom of pistillates. The former should, if possible, be a little earlier than the latter, to insure the fertilization of all early blossoms.

The yields are recorded in ounces, this having been found to be the most accurate method of recording results. The yield in boxes may be approximately ascertained by reckoning sixteen ounces to a box.

The abreviations under the heading "*Firmness*" are:—F., firm; V. F., very firm; M, medium; S., soft; V. S., very soft.

Those under the heading "Color" are: R. red, S scarlet, C. crimson, and the qualifying adjectives, L. light, D. dark.

The comparative size of the berries of the different varieties can be most accurately recorded by giving the weight of fifty averaged-sized berries. To ascertain the point, the weighing of each variety was made at its midseason for fruiting, that is at its fourth or fifth picking

EARLY VARIETIES.

In the following list is given a few of those varieties giving the largest early yield, ranked according to their yield for the first week ending July 1st.

FIG. 1344.

LOVETT.
BEDER WOOD.
MUSKINGUM.

WARFIELD.
TENNESSEE PROLIFIC.
BELLE.

PRINCE OF BERRIES.
ONA.
BISEL.

Rank.	Varieties.	Sex.	Date of first picking.	Yield before July 1st.	Total yield.	Rank for total yield.
				Ounces.	Ounces.	
1	Van Deman	B	June 23	136 75	214.50	12
2	Bessie	B	" 23	73.25	154.75	41
3	Shuster's Gem	P	" 26	68.25	234.00	6
4	Michel's Early	B	" 23	65.75	131.00	63
5	Rio	B	" 23	61.25	134.75	59
6	Haverland	P	" 23	55 50	232.00	8
7	Ona	P	" 26	50.00	177.75	24
8	Smith's Seedling	B	" 26	47.50	93 75	101
9	Beauty	B	" 26	46.50	106.50	89

Late Varieties.

In the following list is given a few of these varieties giving the largest late yield, ranked according to their yield after July 12th.

Rank.	Varieties.	Sex.	Date of last packing.	Yield after July 12th.	Total yield.	Rank for total yield.
				Ounces.	Ounces.	
1	Dominion	B	July 22	87.75	217.75	11
2	Equinox	B	" 22	68.00	121.25	74
3	Prince of Berries	B	" 22	55.50	192.50	19
4	Scarlet Ball	P	" 22	51.50	113.75	81
5	Hatch Expt. Stn. 24	B	" 22	47.25	151.50	45
6	Belle (Crawford's 51)	B	" 22	46.75	158.50	36
7	Princeton Chief	P	" 22	45.50	173 00	25
8	Edith	P	" 20	40.50	97.75	97

Large Berries.

In the following list is given a few of these varieties bearing the largest berries, ranked according to the size of the berries.

Rank.	Varieties.	Weight of 50 average berries.	Firmness.	Rank for total yield.
1	Edith	23 50	F	97
2	Wm. Belt	16.75	F	7
3	Woolverton	16.00	M	5
4	Mary	15 50	M	114
5	Ruby	14.50	F	9

The accompanying photographs are all natural size, and are taken in most cases from medium sized berries.

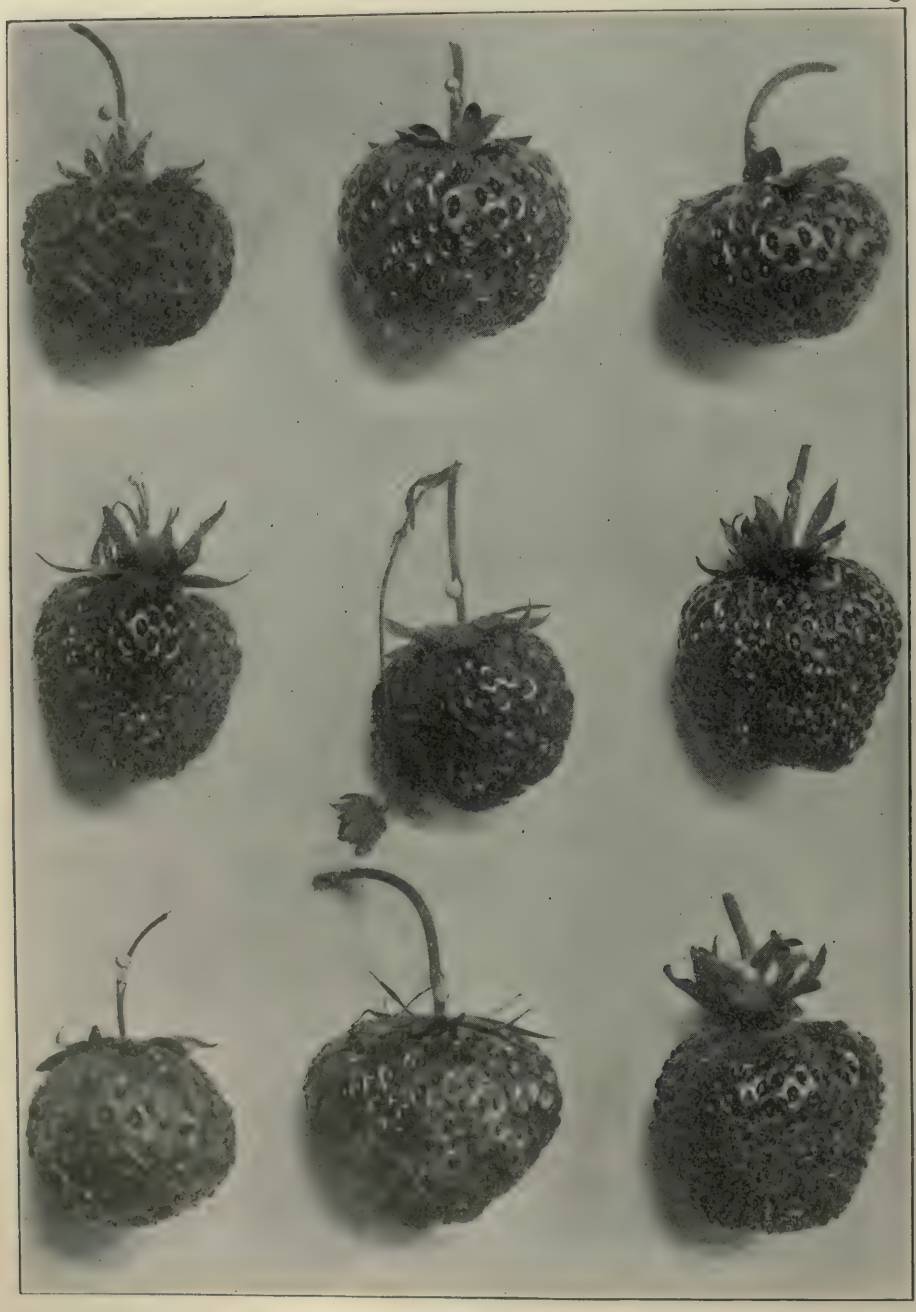


FIG. 1345.—

ANNA FOREST.
ORERHOLTZER NO. 2
NORTHERN.
DOMINION.
STANDARD.
SCARLET BALL.
JERSEY QUEEN.
MARSHALL.
MARY.

BARREL STRAWBERRY CULTURE.

Probably many readers have heard of the plan of raising strawberries on the outside of a barrel. If one has a small city or village lot, or "back yard," the experiment is well worth trying. The accompanying illustration shows one or two wrinkles that may help make the experiment a success. First bore the holes all about the barrel, then put inside a drain pipe made of four strips of board, reaching from the top to the bottom. The joints should not be tight. Now fill in earth about the pipe and set out the strawberry plants in all the holes and over the top. Put the barrel on a bit of plank on the bottom of which wide castors have been screwed. The barrel can then be turned about every few days to bring the sun to all the plants. An ordinary flour barrel will answer very well for trying this very interesting experiment.—Farm and Home.

FIG. 1346.

NEW STRAWBERRIES.

NEW varieties, superior to the old, are constantly being introduced and growers everywhere are on the lookout to secure the most profitable varieties. What we want is a berry which combines the good points of all, with none of their defects. We have made the greatest advance the last three years that has been made for a quarter of a century. There are to-day three varieties that rank first, namely, *The Clyde, Glen Mary* and *Sample.* A rather singular coincidence is that these berries originated one in the West, another in the East and one in the Middle States.

Clyde.—This is the best early variety ever offered the American people.

Glen Mary.—This is the larger berry, ripens later, and on account of its size is equally as profitable

Sample.—This is the latest variety in existence, two-thirds of its crop ripens after July 1st. It is equal to the Clyde in productiveness and the berries are as large as the Glen Mary.—C. S. PRATT, Reading, Mass.

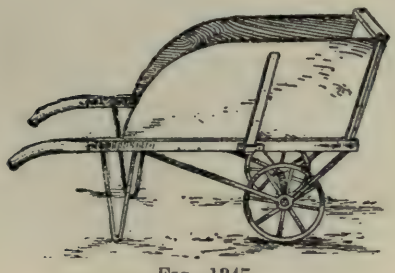


FIG. 1347.

A HANDY GARDEN BARROW.—A great improvement on the ordinary garden wheelbarrow is shown in the cut. The wheels have broad tires, are light and run beneath the body—just in the position to balance the load when the handles are raised. This barrow can be dumped from the side as in the case of the ordinary barrow. It is thus possible to make over one of the old-fashioned wheelbarrows into the style shown, and that, too, at but small trouble and expense.—American Agriculturist.

FIG. 1348.

VAN DEMAN.	SPLENDID.	ARROW.
BEAUTY.	BESSIE.	RIO.
GERTRUDE.	MICHEL'S EARLY.	KOSSUTH.

MR. W. T. MACOUN.

FIG. 1349.—MR. W. T. MACOUN.

IN our last issue we gave some notice of the new appointment of Mr. Macoun as Horticulturist, to succeed Mr. John Craig, who resigned last winter. We have pleasure in giving his likeness in this issue, by use of an engraving that appeared in the April number of our worthy agricultural contemporary, the Farmers' Advocate, of London, Ont.

FRUIT GRADER.

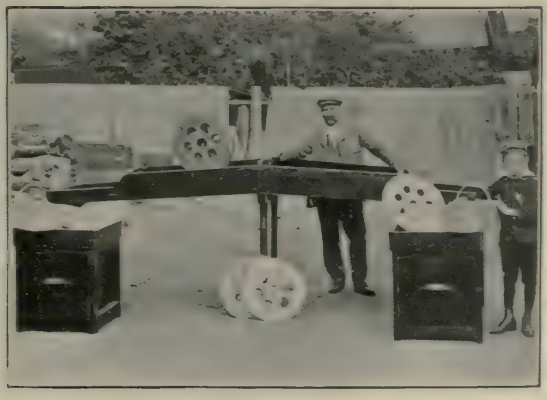


FIG. 1350.—FRUIT GRADER.

MR. E. H. WARTMAN, of Kingston, sends a photo. of a new fruit grader which he has patented, and which he thinkswill be of great use to growers and fruit packers of all kinds of fruit. It is intended to assist them to get fruit more uniform in the packages than it could be done by eye measurement. He writes: "In my first shipment this season I more than doubled my money. They were graded by

my new invention. The platforms of the grader are tight drawn sail cloth. The fruit is run to grading plates or bars, and are caught by a standard separator, either 2, 2½, 3, or 3½ inches in diameter. Smaller fruit is dropped on a linen slide, and carried to the second grader; culls fall in a drawer beneath.

Every package is stamped according to diameter of apple, peach, or pear.

ENTRANCE TO QUEEN VICTORIA PARK.

FIG. 1351.—ENTRANCE TO QUEEN VICTORIA PARK.

SIR,—I send you the inclosed photograph showing the entrance to the Queen Victoria Niagara Falls Park; also showing a bed of hydrangea paniculata grandiflora in full bloom, which has been the admiration of thousands of people during the past four summers; the bed contains 152 plants, and are in four rows, and planted two feet between the plants; they make a grand display, and immense panicles of bloom; the plants are trimmed back to from four to six inches every spring, and only four of the strongest shoots left, all the rest of the wood is cut back to one or two buds, or trimmed on the spur system; the bed is then lightly forked over and a good coat of mulch put on and left alone then to the following spring.

RODERICK CAMERON.

Niagara Falls, March 10th, 1898.

A GOOD WORD FOR THE FAMEUSE APPLE.

FIG. 1352.—MR. R. BRODIE.

Mr. R. Brodie, of St. Henry of Montreal, who has been elected president of the Pomological Society of Quebec for the present year, has been long and favorably known in fruit circles in that province. His grandfather came from the west of Scotland to Canada in 1803, and bought the farm on which Robert now lives. In a letter recently received he writes as follows:—

You will see that I have been brought up in the reign of the Old Fameuse apple, and after trying over 100 varieties I have still to say it is the best for quality and commercially. The McIntosh Red, close allied withthe Fameuse, is a more showy apple, but not as good in quality.

The question was brought up at our La Chute meeting,—Why plant varieties that are subject to fungi, while varieties like Wealthy, Wolf River, and some of the Russians are free from this disease and require no spraying? In my experience I find that varieties like the Wealthy, Duchess and Alexander, are more subject to attacks of the codling moth, plum curculio, than any of the Fameuse family, and before we found the remedy for the apple spot, (Bordeaux mixture), I used to spray the trees with Paris green to kill the insect enemies, with danger of hurting the foliage. Now in adding Paris green to the Bordeaux mixture we can spray without injuring the tree and kill the insect enemies and fungous growth at the same time. The main thing is to get a good pump. Once, in an old Presbyterian church, there was a dispute about getting an organ, they thought they would refer the matter to an old Quaker. The answer was, "If thee mean to praise God with a machine, be sure and get a good one." If you mean to spray your trees be sure and get a good pump, or you will soon get discouraged.

CONVENIENT WEIGHTS.

A quart of water weighs nearly 2 lbs., and is equal to a square box of about 4 x 4 inches and 3½ inches deep.

A gallon of water weighs from 8 to 10 lbs., according to the size of the gallon, and is equal to a box 6 x 6 inches square, and 6 x 7 or 7½ inches deep.

A peck is equal to a box 8 x 8 inches square and 8 inches deep.

A bushel almost fills a box 12 x 12 inches square and 24 inches deep, or 2 cubic feet.

A cubic foot of water weighs nearly 64 lbs. (more correctly, 62½ lbs.), and contains from 7 to 8 gallons according to the kind of gallon used.

A barrel of water almost fills a box 2 x 2 feet square and 1½ feet deep, or 6 cubic feet.

Petroleum barrels contain 40 gallons, or nearly 5 cubic feet.

THE NEW YORK MARKET.

To the Editor of the Horticulturist:

SIR.—This vast, consuming market is being supplied with celery from California. It arrives here in *best* condition. The heads are extraordinarily large and very white. There is very little waste. It retails for 15 cents per head, and taking size, quality and freedom from waste into consideration, it is not very dear. We thought it strange a few years ago to receive celery from the western part of Michigan, and to-day we receive it in better condition from California. Celery is a vegetable that can be shipped in car loads to this market with safety, so that the cost for transportation can be reduced to a very small sum per head. Hundreds of acres of it are raised near Kalamazoo, Michigan, and sent east to the market.

Why can it not be raised most successfully upon the strong fertile lands of Ontario?

I am confident that there is more money in shipping tomatoes to this market from Canada than to Great Britain.

If the fruit growers of Ontario will establish an agency in New York and advertise prime Canadian fruits and vegetables liberally, a permanent and reliable market can be opened for all first-class goods you can send us. California green goods are sold at auction upon arrival for spot cash upon the wharf where they are unloaded, so that there is no expensive warehouse required. They nearly all come by the Erie Railway. For prime products the competition among dealers is very sharp. They are scheduled to arrive upon certain days in the week after midnight, and are unloaded, opened and sold at auction early in the morning. Capital and brains are pushing California to the front as a fruit and vegetable producing country. There is far more good land in Ontario than in California, and it is nearly 3,000 miles nearer the great consuming markets of this nation of feasters. Californians have learned not to send second class goods to this market. Such goods will not return charges, when prime goods will pay handsomely. The combination that is winning in California can do so in Ontario.

FRANCIS WAYLAND GLEN.

New York, March 21st, 1898.

"The following clipping is from the New York Sun:

POMONA, Feb. 28th.—The most conservative estimates of the capital now invested in orange and lemon growing in California put the amount at $43,000,000. In Los Angelos county alone some $12,000,000 is invested in the citrus fruit industry. It is also estimated that some $60,000,000 to $80,000,000 is invested in California in the growing of prunes, peaches, olives, apricots and small fruits. A frost in midwinter, when the orange and lemon trees are in fruition, and again March or April, when the deciduous orchards are blossoming, may, therefore, in a few hours ruin the income from a capital of from $100,000,000 to $120,000,000. Since irrigation has been made a science and a periodical rainfall is not so all important, where insect pests are annihilated by gases and chemical decoctions, and where there is little possibility of damage from tempests, frost is now practically the only menace to fruit growers.

MAIDEN-HAIR FERNS IN THE HOUSE.—There are some people who will not be convinced that it is possible to grow maiden hair ferns in an ordinary dwelling. The other day I saw, in a furnace-heated, gas-lighted house, as pretty a specimen of maiden-hair fern as any one could wish to see. "I grew it just like my other plants," the owner said, "with this exception." Then she lifted the pot from its pretty jardiniere, and I saw that the bottom of the jardiniere contained four or five inches of water, and that the pot rested on a stone placed in the centre that held the bottom of the pot up just above the water.—Vick's Magazine.

AN ICE SCENE AT NIAGARA FALLS.

Fig. 1353.—An Ice Scene at Niagara Falls.

WE have read of the silver trees of Table Mountain, South Africa, which are a great attraction to travellers and sailors at great distances when the sun shines upon them, some of the leaves of which are in my possession, and they must be very beautiful trees, but I question if they can be more beautiful than the picture before us, and we need not go so far to see them, as they grow in Q. V. Niagara Falls Park, and when the sun shines upon them, on a clear, cold frosty day, they are beautiful beyond description, in fact they are called crystal trees by visitors, formed and grown by Niagara Falls and Jack Frost, one quarter mile from the great Horse-shoe Falls.

The tree to the right of the picture is *Tilia Americana*, Lime Tree or Basswood. The two trees to the left are *Thuja-Occidentalis*, American Arbor Vite or White Cedar.

This picture was taken by a first class photographer, J. Zybach & Co., Niagara Falls, Ont.

R. Cameron.

Niagara Falls Park.

WISCONSIN STATE HORTICULTURAL SOCIETY.

THE above Society held its annual winter meeting in the State House at Madison, Feb. 1 to 4. The attendance was fair and the exhibits of fine quality. The apple crop of the State being quite light the past season, the display was not large, being only 95 plates. One of the features of the exhibit was a potato show, in which there were 204 plates and baskets, 158 of which were from the Riverdale Seed Farm, Grand Rapids, Wis., and included a collection of 70 plates of one year old seedlings, the first ever shown. The same parties also made an exhibit of 87 varieties of beans in glass bottles, showing the results of several wonderful crosses and hybridizations. Visitors and delegates were present from Minnesota, Iowa and Illinois.

Mr. Stickney, the largest currant grower in the State, said that he had eight acres of Fays, but had dug them all up but one acre. They required very high culture and too much petting. He considered Long Bunch Holland and Prince Albert the two best for profit. White Grape the best white currant, and he recommended it highly for home use. Wilder quite promising. North Star is a strong thrifty grower, but thought it only little superior to Red Dutch.

Mr. Harding, reporting for trial station under his charge, said that varieties of apples top worked on Whitney are blighting quite badly. Virginia is considered the best stock for top working the tenderer varieties upon.

O. M. Lard, of Minnesota, read a paper on "The Plum as a Fruit for the People of the North-West." Mr. Lard is a plum specialist, and the sample jars of canned plums he had with him showed that he was quite successful in growing them. He named De Soto, Rollingstone and Cheney as the three best American plums; would set 8 x 16 ft., mixing different kinds, so that they would cross fertilize. After thirty years experience, he is convinced that too much good culture cannot be given. Barn-yard manure and ashes are the best fertilizers.

Mr. Ferris, of Iowa, recommended grafting plums upon the Sand cherry, saying that they would bear much quicker and would produce abundantly.

Geo. J. Kellogg said the Miner was of no value unless other varieties were planted with it.

Clarence Wedge, of Minnesota, said that he planted Hawkeye with the Miner, and they fruited all right.

A. L. Hatch opened a discussion on the most economical method to restore exhausted fertility to worn out orchard lands. He thought that a liberal supply of barn-yard manure and wood ashes was the best thing to apply. L. H. Read spoke of the increasing use of Cow peas in orchards through the States of Illinois and Missouri, and also believed that they were adapted to more northern States, especially upon sandy soils. There has been a constant assertion by many that they were not adapted to the north, but we are finding out that this is false. Having tested them in a small way in central Wisconsin the past year, are convinced they are the greatest crop for green manuring that we can grow.

Mr. Stickney said that he had tested several varieties of the Cow pea, and they made a good growth, but required the entire season. He wanted something that he could use, say the last of June, after taking off an early crop, that would then make a growth sufficient to

plow under, and as the field pea did not do well late in the season, he intended to plant some strong growing varieties of beans as an experiment this year.

Mr. Toole, of Baraboo, read a paper on "Horticulture in our Schools," which was followed with a discussion upon the subject, showing that many were in favor of teaching the primary principles of horticulture in our public schools.

Prof. L. H. Bailey said, "I do not believe we can teach agriculture and horticulture in the public schools any more than we can teach medicine or any other profession. But he believed in teaching the child to study nature. The ultimate object of education should be the student rather than his farming. There are two things in agricultural education, theories and practice; but we find that those who claim to be opposed to theories, are the ones most full of theories. To educate the boys on the farm, first have a good farm, and to make a good farm you must first reach the farmer. The one crop farm makes a one crop farmer, a grass farmer makes a grass man. Diversified farming developes the man in many ways."

[This idea was hardly in accord with the belief of many of his hearers, that the only men who succeed in life are those who concentrate their efforts along some special line or lines.—L. H. R.]

Pres. L. G. Kellogg in his annual address said that the planting of the trial station at Wansan was one of the best things the Society had ever done, and recommended the establishing of several more in different parts of the State.

The election of officers resulted in re-electing all of the old officers excepting the Vice-President. Pres., L. G. Kellogg, Ripon; Vice-Pres, Franklin Johnson, Baraboo; Sec., A. J. Phillips, West Salem; Treas., R. J. Coe, Ft. Atkinson; Cor.-Sec., W. J. Moyle, Madison.

Prof Bailey spoke upon "Fruit Buds." He said pruning to shape is a matter of individual taste. Heavy pruning of the top of a plant always tends to a growth of wood. Winter pruning in the North-West permits the freezing and drying out of the sap of the tree. Heading in of strong growth tends to lateral and dormant buds, also tends to develop fruit bearing. Checking growth so long as the plant remains strong and healthy tends to fruitfulness. Pruning, however, is a secondary means for bringing fruit into bearing. Natural methods should first be used. If the tree is growing too rapidly, check its growth by withholding plant food from it, either by growing some crop about it that will tend to exhaust the fertility of the soil, or seed down to grass. When fruit bearing has once been reached, they should be kept bearing the same, as we keep a laying hen laying. A continuous amount of pruning every year should be given rather than a heavier pruning once in two or three years, as a severe pruning tends to upset the growth of a tree. Heavy bearing has the same effect as heavy pruning, it upsets the equilibrium. If they did not get in the habit of over-bearing, they would bear every year. If we are to make a tree bear every year, we must supply a greater food supply, or we must remove a part of the fruit. Removing the fruit affects chiefly the spur upon which it is. The same spur, however, does not as a rule bear every year, one spur bearing one year, and another the next. It would seem, therefore, that the removing of all fruits from some of the spurs would tend to better results in making them bearing spurs the next year.

It seems that it might be best to make a part of the trees bear their crop

in the year when most trees are not bearing. The tendency is where a part of the fruit is removed to annual bearing. Winter pruning tends to produce wood, whereas summer pruning does not.

Dr. Loope asked what time of the year he should prune his young orchard.

The Professor replied: "For my own section of country, I would prune from now to spring, but would not dare to say that it would do in this climate to prune at this season of the year."

E. C. Alsmeyer read a paper entitled "Prospects for Wisconsin Nurserymen," in which he recommended a combination to keep up the prices of nursery stock, as it cost more to grow a six ft tree than they had been selling for.

Mr. Read recommended the education of the farmer to the planting of smaller trees, as they could be produced at a less cost, and would make much better trees in from three to five years from planting.

Mr. Wedge said that he believed in heretical ideas in some things, was a believer in free trade, but when it came to nursery stock believed in protection, the southern and eastern grown trees had been a great damage to the tree business in Minnesota.

Mr. Voris, of Illinois, said he believed in the planting of young trees one to two years old, as they stand transplanting much better than older trees.

Several speakers spoke in favor of large trees, saying that the farmers would take better care of a large tree than they would of a small one.

Sec. Phillips said he had found that he could convert a few by giving them some young trees to set out, and when they come back in a few years they always want the small trees, as they grow much better.

C. Wedge spoke of "The Best Varieties and Best Way to Plant an Orchard." He recommended the Repka Melenka as a very hardy winter variety. Would plant wide between the rows, and close in the row, thirty-five to forty ft. between rows, and twelve ft. apart in the row for Duchess, a little farther for Hibernal, of which we are planting very largely in Minnesota. We recommend in our hardiest list, Duchess, Hibernal, and Peterson's Charlemoff. Secondary list, Wealthy, Longfield, Tetofsky and Melinda. We have a Wealthy fever, and a large number of them are being set. Patten's Greening is very highly regarded with us also. It keeps nearly as well as Wealthy with us in Minnesota. Okabena is very excellent to follow the Duchess. Very hard to tell the fruit apart, but think it will keep about a month longer. Peerless we do not think any hardier than Utter, and do not think we have any use for it. Nearly all of the varieties that we have on our recommended list are either Russian or of Russian origin.

Ques.—In setting, would you set in fall or spring?

Ans.—I think we are all agreed in taking up in fall, and healing in and then set in the spring. It is too much to ask a young tree to stand taking up, and then the exposure of being set in orchard to stand through the winter.

Ques.—Would you set on the slant or not?

Ans.—I am inclined to lean them a little, and to be careful not to prune too much on south side.

F. C. Edwards read an excellent paper on "Small Fruits." As to varieties he said, It will depend much upon your soil, what kinds to plant, but use staple varieties and not run after strange gods, but experiment in a small way with a few of the most promising new kinds. Have your ground so divided

among the different kinds of fruits, so that you can furnish a continuous supply from the time strawberries are ripe until all small fruits are gone. Look first to your local market, for they must be the largest consumers.

F. Johnson said that one thing that everybody ought to grow was asparagus, as it was easy to grow, and one of the best of all the garden crops for home use. In strawberries he called Crescent his best berry, with Haverland second, and Beder Wood for a fertilizer. Had found that Enhance has one good point, the pickers wont eat it, the quality is so poor, for that reason the yield seems larger.

In the discussion of varieties that followed, Mr. Read said that Splendid, Enhance, Brandywine, Lovett's, Beder Wood, Parker Earle, Haverland and Bubach would be the varieties that they intended to set this spring at Riverdale Farm.

L. H. READ.

Grand Rapids, Wis.

DIRECTIONS FOR SPRAYING.

1. APPLE.

TREATMENT for destroying *codling moth, bud moth, tent caterpillar, canker worm, apple spot, leaf blight, pistol case bearer* and *powdery mildew.*

First spraying: Bordeaux mixture and Paris green (4 oz. to the barrel of the mixture) when the buds are swelling.

Second spraying: Bordeaux mixture and Paris green before the blossoms open.

Third spraying: Bordeaux mixture and Paris green when the blossoms have fallen.

Fourth and fifth sprayings: Bordeaux mixture and Paris green at intervals of ten to fifteen days if necessary.

No definite date can be named after which it would be safe to cease spraying for the apple scab. The orchard should be watched after the third or fourth application, and the treatment again applied if scab appears on the fruit or leaves.

Many apple growers who sprayed in 1897 until the end of June, and neglected to watch their orchards afterward, lost heavily. The scab appeared very late in the season last year, and all the experimental orchards were given an extra application in the early part of July, which largely accounts for the splendid results obtained.

2. PEAR.

Leaf blight scab and *codling moth*, the same treatment as for the apple.

3. PLUM.

Curculio, brown rot and *leaf blight.*

First spraying: Bordeaux mixture before the flower buds open.

Second spraying: Bordeaux mixture and Paris green as soon as the petals have fallen.

Third spraying: Bordeaux mixture and Paris green in seven to ten days after.

Fourth spraying: Bordeaux mixture in ten to fifteen days after.

4. PEACH.

Brown fruit rot, leaf blight, plum curculio and *peach curl* (*Exoascus sp.*)

First and second spraying: Same as for the treatment of the plum.

Third spraying: Bordeaux mixture in two or three weeks.

Fourth spraying: Ammoniacal copper carbonate, if any danger of disfiguring the fruit with Bordeaux mixture.

5. CHERRY.

Aphis, slug, brown rot, and leaf blight.

First spraying: Bordeaux mixture as the buds are breaking; if the *aphis* appears use kerosene emulsion alone.

Second spraying: Bordeaux mixture and Paris green as soon as the blossoms fall.

Third spraying: Bordeaux mixture and Paris green ten to fifteen days after.

6. GRAPES.

Mildew, black rot, flea beetle and leaf-eating insects.

First spraying: Bordeaux mixture and Paris green when leaves are one inch in diameter.

Second Spraying: Bordeaux mixture and Paris green when flowers have fallen.

Third and fourth sprayings: Bordeaux mixture at intervals of ten to fifteen days.

Paris green alone when the beetle is attacking the buds in the spring.

7. RASPBERRY.

Anthracnose, leaf blight and saw-fly larvæ

First spraying: Bordeaux mixture and Paris green just before growth begins.

Second spraying: Bordeaux mixture and Paris green about when first blossoms open.

Third spraying: Bordeaux mixture when the fruit is gathered.

8. CURRANT AND GOOSEBERRY.

Worms and Mildew.

First spraying: Potassium sulphide, Bordeaux mixture and Paris green as soon as the leaves expand

Second spraying: The same ten to fifteen days later.

For worms alone, hellebore or Paris green will be effective.

9. TOMATO.

Rot and blight.

Spray with Bordeaux mixture, as soon as rot or blight appears, for three times, if necessary, at intervals of ten to fifteen days.

10. POTATO.

Blight and Beetles.

First spraying: Paris green as soon as the beetles appear (one pound to 100 gallons of water).

Second spraying: Bordeaux mixture and Paris green when plants are six inches high.

Third and fourth sprayings: Bordeaux mixture at intervals of ten to fifteen days, if necessary.

11. CABBAGE.

Pyrethrum applied in solution (one ounce to four gallons of water) or dusted on (one part pyrethrum to seven parts flour) for the cabbage worm.

FORMULA FOR MAKING BORDEAUX MIXTURE.

Copper sulphate.....	4 pounds.
Lime (fresh).....	"
Water.....	40 gallons.

Suspend the copper sulphate in five gallons of water. This may be done by putting it in a bag of coarse material, and hanging it so as to be covered by the water. Slake the lime in about the same quantity of water. Then mix the two and add the remainder of the 40 gallons of water.

Warm water will dissolve the copper sulphate more readily than cold water. If the lime is at all dirty strain the lime solution.

If the lime is good the above amount is likely to be sufficient. It is an easy matter to know how much lime is required by using what is termed the ferrocyanide of potassium test. This substance can be got at any druggist's, and

very little is required. Take a small bottle (2 oz.) and get it filled with a saturated solution of this compound. If there is not plenty of lime in your mixture, a drop of the test added to it, turns brown. Add more lime and stir. As soon as the test fails to color in coming in contact with your mixture, it indicates there is sufficient lime present to neutralize the effects of the copper sulphate. Use wooden vessels in preparing the Bordeaux mixture.—Special Bulletin on Spraying.

GOOSEBERRIES WITHOUT MILDEW.

I NEVER have any mildew in my garden for the following reason: A piece of ground must be very deep and well filled with good old barnyard manure; it must not be clay and must not be sand, but such as you would prepare for cabbage. Plant in rows 4 feet apart and 3 feet apart in the row; get them in good shape. The third year remove the earth off the roots all round the bush and put three inches of old rotten manure in its place, and cover it over with the earth and tap it down. Then prune severely and put one half pail of wood ashes upon the bush. This I do in October and in the spring, and when the fruit is set I take some fine table salt and sprinkle on the bush, or, what perhaps is better, dissolve a handful in water and sprinkle with sprays and again 3 weeks hence. When the mildew is apt to come, do the same again later. Treated in this way we have successfully grown the Industry, the White Smith and other varieties equally liable to mildew for the past 16 years perfectly free from it. So that heavy, well cultivated land, severe pruning, liberal use of ashes, and the salt as I have described, is all that is needed to keep away mildew in this locality. I have not had it in my garden in 20 years.

JOHN CARNIE.

Paris.

LATEST INFORMATION ABOUT THE CODLING MOTH.—*Carpocapsa pomonella.*

A RECENT Bulletin by Mr. V. Slingerland, entomologist at the Cornell University Agricultural Experiment Station, embodying the results of his personal observations of the habits of this insect, contains much new information. The purpose of this paper is to present only such items of his discoveries as are of practical importance to most of our Canadian fruit growers.

Heretofore we have been told, and the writer when addressing Farmers' Institutes during the last six or seven years, has many times repeated the tale, that the mother moth of the spring brood lays her eggs in the cavity at the blossom end of the apple while that end is upwards, Mr. Slingerland has ascertained that such is not the case. He has found that in about a week after the petals have fallen the calyx segments of the apple blossoms begin to close up and in a few days are "drawn completely together, forming a tight cover over the calyx cavity." On the other hand he discovered "that the majority of the moths do not emerge (from their cocoons) until several days after the petals have fallen," and that for the most part the calyx cavity is tightly covered over before the female moths commence laying. On examining their ovipositor (egg laying instrument) it was found to

be "only adapted for laying eggs on the surface," it being of such a shape that it could neither pierce the calyx lobes nor be inserted in any way into the covered basin. He learned that in fact the eggs are laid "on the smooth surface of the fruit without much choice as to location," that they "may be glued anywhere it happens to the surface of the fruit, to the stem, or even on the adjacent leaves," and says that though he has "seen hundreds of the eggs during the past two years on apples," he had "*never yet seen one on or down in between the calyx lobes.*"

Notwithstanding these facts the worms, to the extent of seventy-five per cent. or more, were found to enter the apples at the blossom end. They began to appear about a fortnight after the trees are out of bloom, and having found their way into the blossom end "spend several days feeding around in the calyx cavity," reaching "the core in about a week." The worm is "from twenty to thirty days of its life feeding inside the fruit," and when nearly full grown "proceeds to eat a passage way, usually by the shortest route, toward the exterior."

We have therefore learned, thanks to Mr. Slingerland, *First*, that though the mother moths do not lay their eggs in the basin of the blossom end as was supposed, yet the tiny worms, not longer than the sixteenth of an inch, to the extent of not less than three fourths of them enter the apple by way of the calyx basin, where they tarry for several days "feeding around."

Second, that in about eight days after the petals fall, the calyx segments are so closed over the basin that it is very difficult or quite impossible to place in the basin a poison that the worm might swallow with its food; a fact that accentuates the necessity of the poison being put there within the few days that elapse between the fall of the petals and closing of the calyx segments.

Third, that somewhere about a fourth of the worms get into the apples by some other way than through the blossom end. Whether any considerable eating of the parenchyma of the leaves is done by the worms that are hatched from the eggs laid on them, has not yet been ascertained. If they do feed on the leaves for a time, we might be able to poison the most of them. Be that as it may, there will be a number for us to kill that we have not been able to poison. If the fruit grower is prompt and thorough he may, by spraying immediately after the fall of the petals, and again before the calyx lobes have closed so much as to exclude the spray, deposit in the basin sufficient poison to make it very probable that the worms in feeding there will eat enough to kill them. The best poison is pure Paris-green; London-purple is both cheaper and lighter, but its strength as a poison cannot be relied upon. One pound of Paris-green in two hundred gallons of water, which is a quarter of a pound in a fifty gallon barrel, is the quantity to be used, first making it into a thin paste with a small quantity of water, and as it is slowly poured into the barrel having the water constantly stirred so that the poison may be evenly distributed. If added to a barrel of Bordeaux mixture it can be used immediately, otherwise it will be necessary to stir in half a pound of freshly slaked lime. In order to make sure of having the calyx basins all well supplied with the Paris-green it will be necessary to spray twice, once as soon as the petals are fallen, again just before the calyx segments interfere with the spray getting into the basin. The almanac is no guide in this matter, but the time must be ascertained each season by watchful observation of

the condition of the trees. The days are few in which the poison can be lodged in the little cavity; once there, if not washed out by rain before the closing of the calyx segments it will be securely protected by them and kept in store for the little worm. If rain should fall after spraying and before the basin is securely covered, it will be necessary to spray again immediately after. Thorough work in spraying, so as to reach every apple every time it is done, is as important as to spray at the right time.

Now, for those worms that fail to get poisoned, be it those that do not enter the apples at the blossom end, or such of those that do, which escape being poisoned. It is evident that we cannot get at them before they will have done their work of injury to the apple crop, all that we can hope to do will be to prevent them from becoming moths that will lay eggs for another generation of worms. It pays well to do even this, for it is not altogether locking the stable after the horse has been stolen.

Usually a considerable number of apples fall prematurely, especially of the early ripening varieties, because of the presence of the worm within, or of the work of one that had been within. The writer has never been able to find half of the fallen apples to contain a worm, although a worm had evidently fed and matured in nine tenths of them; which fact indicates that it will never do to expect to destroy all the unpoisoned worms by feeding the fallen fruit to pigs or sheep, either in the orchard or elsewhere. None the less it is important to destroy even these, for every surviving female moth may lay about a hundred eggs, and when pigs or sheep can not be allowed in the orchard, the fallen apples should be daily gathered and the worms in someway destroyed.

Very many of the worms leave the apples while they are yet on the tree and crawl down to the trunk seeking a hiding place in which to spin their cocoons, and most of those that fall to the ground find their way to the tree and crawl up the trunk on the same errand. Availing ourselves of this habit we can trap a great many of those worms by placing around the trunk and where the branches fork out from it, something that will afford the worm a hiding place. The writer has been in the habit of suggesting a trap made of strips of cheap wrapping paper, five or six of them placed together like leaves of a book, long enough to go around the tree trunk and six or eight inches wide, made fast by a string placed in the middle between the upper and lower edges, and both these roughened up so as to somewhat seperate the leaves of paper, thus affording easy entrance to the worms coming down or crawling up the trunk. These paper strips should be visited every ten days, commencing at four weeks from the falling of the apple blossoms, and continuing until September: at each visit untie the string, carefully take off the band without separating its sheets, run it through a clothes-wringer that will be taken along, replace and fasten with the string and proceed thus through the orchard. Mr. Slingerland advises putting on two such traps, one at a short distance from the ground, the other at a like distance from the branches.

In the old Niagara district this insect produces a full second brood every summer, but the worms cover themselves with a cocoon in the fall, they do not change to the pupa state until the following spring. These second brood worms are found in our late fall and winter apples, rendering less or more of them unfit for market. They go with the fruit into cellars and storerooms, and their cocoons are found in the

crevices of the boxes or barrels in which the fruit is kept, and in many a nice hiding place about the room. Wherever there is a second brood the traps should be left on the tree trunks until a fortnight or more after the apples have all been removed from the orchard, none left even on the ground, when they may be again put through the wringer and put away until another season. About the time the moths appear again in the orchard, the second brood moths may be found in the cellars in which fruit has been kept. The writer has seen large numbers fluttering at the windows of his fruit cellar seeking to get out; if these are prevented from escaping they will ere long perish without doing any further mischief.

The territorial limits of the second brood have not yet been ascertained. Our Dominion entomologist, Mr. Fletcher, says that there is but one brood at Ottawa, and believes that this holds good up to Toronto. Whether there is more than one in the fine apple growing region of the Beaver Valley and of the whole south shore of the Georgian Bay, the writer is not informed, but if only one brood, then the worms that form cocoons in the summer will remain in them until the next spring; whence, after passing a short time in the pupa state, they will emerge as moths.

The sum of the matter is this; the calyx basin of the apple blossom is open for the reception of a poison for only a few days; the moths do not lay their eggs until after the basin is closed and deposit them anywhere on the surface of the apples; these are hatched in a few days and the greater part of the worms work their way into the calyx basin and feed around in it for several days; the fruit grower may, if watchful, improve the opportunity to put into the open basin a poison that will be safely kept by the closing of the calyx segments until the worms in feeding get it; the best poison is Paris-green, which can be put into the basin by timely and thorough spraying; the worms which do not die by the poison may be caught, some in the apples that fall prematurely, and more in paper bands tied on to the trunks of the trees and passed every ten days between the rollers of a clothes-wringer; in those places where there is a second brood, the injury done by that brood will be lessened in proportion to the number of the worms destroyed in the prematurely fallen fruit and by the wringer; and the next year's crop will be benefited by keeping all that may be taken with the fruit into cellar or fruit room securely shut in until they perish.

D. W. BEADLE.

303 Crawford St, Toronto.

ANTIQUITY OF FRUIT.

YES didn't our forefathers know how to relish fruit as much as we do now, and they too enjoyed their simple varieties as much as we do our most choice kinds. Indeed some of the very kinds we cultivate now in our orchards, our ancestors planted, tended and harvested the fruit. See for instance our much valued "Greengage" plum, how was it named, just merely by accident being introduced into England from France by the Earl of Stair, under the name of "Green Spanish." The Gage Family in the last century procured from the monks of the Chartreuse at Paris, a collection of

fruit trees. On arrival in England, the label on a plum tree having been lost, the gardener being ignorant of its name, called it from its color "green" and its employer's name Gage — thus "green-gage."

But what our ancestors boasted of and what they were proudest of, were cherries. We even read that cherries were planted in England one hundred years before Christ, whilst in 1540 an orchard of 32 trees produced 1,000 quarts which were sold strung along sticks and peddled from house to house. The Court of James I. amused themselves, having matches who could eat the most cherries, one would imagine a doctor would be needed after one of the Court ladies managing to gorge 20 lbs., beating her opponent by 2½ lbs., with a serious illnesss as the result. Grapes also were planted and tended with care the clergy being most clever in managing vineyards. The Bishop of Hereford in 1289 excelled in wine-making, making from his vineyard 7 pipes—882 gallons of white wine and 1 pipe of serjuice. Adulteration was a severe crime; Henry VI having ordered in 1427, 16,200 gallons of wine which was adulterated to be poured into the street and the culprit to suffer the loss of his hands. A severe frost damaged the fruit in 1257, the English having a great scare thinking there would be none. One good deed of Henry III. before his death, was to order 2,000 chestnuts to be planted in his park. A yearly item of fruit for the table of Edward I. being £21 14s. 1½d—$108.53. In his reign we first read of the orange being introduced, seven being brought from Spain in 1290. But its use being very different from ours now, for Cardinal Wolsey having removed the flesh inside substituted a sponge soaked in aromatic vinegar as a precaution against pestilential airs. Thus we, who devote our whole time to fruit culture, only follow in the footsteps of those who have pursued the same lines, with the exception only—having much more improved varieties and improved methods

NIGEL KEEP.

Winona.

JAPAN PLUM—SPRAYING WITH LYE, ETC.

I HAVE tried a number of Japan plums and Russian apricots; some of each winter-killed, while others have made a fine growth, but although four years planted have not blossomed yet. There are some blossom buds on them now and possibly there may be some result from them next season. For bark louse I have sprayed my trees with kerosene emulsion, with not very satisfactory results although tried persistently for several seasons, choosing the time when the young lice are moving on the young branches. My brother has used instead lye from hard wood ashes diluted to 1 part lye and 2 parts water—with most satisfactory results. Some of his trees (15 years old) were so badly infested that they were almost dead and altogether unfruitful, but under the lye spraying treatment are quite revived and have nice clean bark. I am so convinced of the superiority of lye as a spray that I will use it instead of kerosene emulsion in future.

D. S. MCDONALD,

Glendyer Mills, Mabou, C. B., Nova Scotia.

HOW TO GROW SWEET POTATOES IN CANADA.

THERE are a large number of people who have the impression that the sweet potato cannot be grown in this climate; that they are an article peculiar to the South.

As I have for a number of years experimented in growing them in order to find the variety best suited to this climate, I have at last succeeded (to my own satisfaction at least). I have planted all known standard as well as all fancy varieties that I could obtain. Last year I heard of a new kind called the Golden Coin, for which I sent a fabulous price, but the person to whom I sent the money obtained the Coin while I obtained a fine lot of tops with tubers like lead pencils.

I have been frequently asked how do I raise such fine potatoes? My answer is, Can you raise cucumbers? They look at me in amazement, and seem to think I am losing my reason, but it is even so. If you can raise cucumbers you can raise sweet potatoes You would not think of raising the cucumber without first preparing the ground and using plenty of manure if you want them early and good.

If you want good potatoes the greater part of the work is done before the the plants are set out.

Obtain your plants as early as possible, (from May 1st to June 1st,) set them out in fruit boxes, four plants in each box, then put them in a cold frame, or hot-bed with gentle heat, ventilate well through the day, protect well at night especially if the weather is cold: Do not give too much water or they will rot, better too dry than too wet. About the first week in June have your ground good and mellow, mark it off into rows about 2 ft. 6 in. or 3 ft. each way. Now at every corner place a forkful of well rotted manure, do not use fresh manure as the results are much better from that which is well rotted.

After placing the manure in position, take your hoe and chop it up mixing the soil with it, then form it into a nice hill with the prepared soil in the centre. When you have thus prepared your ground you are now ready to set out the plants as soon as you feel safe from frost. Do not be in too great a hurry to get them out, the plants do not like cold weather, they will stand hot and dry, much better than cold and wet. After the ground has settled and you feel safe to set out, take the plants from boxes the same as you would re-pot any flower, by striking the box on its side, and place the ball in the centre of the hill prepared for it by making a hole for it, press the dirt well up to it, and so on, until you have set them all out. Stir the ground often to keep down the weeds and keep the plants well hilled up. As soon as the vines begin to run nicely, stop working for the ground should be clean by this time. Now wait for results. You will have no trouble with potato bugs or insects, for I have yet to find an enemy to destroy either vine or tuber. If you follow the above directions I am sure you will be well rewarded for your trouble.

W. E. LEADBEATER.

Woodstock, Ont.

ARSENITE OF SODA A SUBSTITUTE FOR PARIS GREEN.

THE Ohio Experimental Station at Worcester, has published a bulletin advising the use of soluble arsenic in place of Paris green. As shown in the following selection, Paris green is a good insecticide, but is somewhat troublesome to use in liquid form, as it does not dissolve readily, and needs constant agitation to keep it from settling.

If allowed to settle at all the distribution is not uniform, and injury is likely to result to the foliage of some plants, while the insects on other plants escape. Moreover, it is unduly expensive, whether used dry or in the form of a spray.

White arsenic, in soluble form, costs about one-third as much as Paris green and gives no trouble in the way of settling.

Dissolve two pounds of commercial white arsenic and four pounds of carbonate of soda (washing soda) in two gallons of water and use one and one-half pints to a barrel of Bordeaux mixture (50 gallons).

The easiest way to make the solution is to put both the white arsenic and carbonate of soda in a gallon of boiling water and keep boiling about fifteen minutes, or until a clear liquid is formed, and then dilute to two gallons.

One and one-half pints of this solution to each barrel of Bordeaux mixture is sufficient to use when spraying for potato blight and potato bugs, for apple scab and apple worms, or for any other purpose where a combination mixture for fungi and insects is required.

This combination has been fully tested at the Ohio Experiment Station and found to be quite as effective as the Paris green and Bordeaux mixture combination, and for the reasons given above is much to be preferred

This arsenic and soda solution, or arsenite of soda, is more safely used in combination with Bordeaux mixture than alone, as when in combination it will not injure the foliage, but alone it is liable to burn the leaves. The same objection holds good, however, with reference to Paris green and London purple.

It is better, however, in almost every case, to use the combination mixture as fungi are nearly always present and unless they are kept in check there is but little use of fighting insects.

Specific directions for making and using Bordeaux mixture, as well as how to control various insect pests, can be found in a spray calendar issued by the Ohio Experiment Station.

The arsenite of soda may be prepared in any quantity desired, but being almost a clear liquid is somewhat dangerous to keep on hand. The danger may be obviated, to some extent, by coloring the liquid with some cheap aniline dye, using enough of the latter simply to give sufficient color so that no one would mistake the solution for an inoffensive drink.

It takes but a short time, however, to prepare sufficient for a day's spraying, which is, perhaps, the least dangerous method. It is a rank poison and should be properly labeled and carefully guarded, the same as all other poisons. Insects may be the means of spreading fungous diseases and fungi may so enfeeble plants as to make them an easy prey to insects.

COAL ASHES AS A FERTILIZER.

SIR.—I have frequently noticed the statement, that coal ashes are of no value as a fertilizer. If so, can you explain my experience?

In the spring of '96 I put, at the east end of the woodshed, the ashes from five tons of coal, making a bank about six feet by three feet, and about one foot deep. I threw over this less than an inch of clay soil. There grew up a curious crop of weeds, among other things a tomato plant. As it was late in the season it did not give much fruit, but the uncommon growth led me to try an experiment. So last spring I put on the same bank the ashes from eight tons of coal. On this, with about a gallon of soil in each hill, I set eight tomato plants. They grew to an enormous size, some branches trained against the wall reaching over seven feet. The fruit was abundant, uniform in size, smooth and firm. They seemed more acid than usual. I think it was the Acme variety.

I shall try again without putting earth in hill. There was certainly not earth enough within reach of the plants to account for the growth, besides the soil was very poor, as I put three plants from the same lot in the soil at the edge of the ash bed, and they were not worth cultivating.

From my experience I know tomatoes and weeds grow well on coal ashes, and I don't see why they might not be used for something better than the roadway.

C. H. LOWRY.

Hagersville, March 28th.

CULTURE OF ASPARAGUS.

IN all applications of fertilizers, it should be remembered that the roots store up during the summer for the following year's crop, and fertilizers applied late in the fall will have little effect on the crop the following spring. Nitrate of soda or a similar quick-acting agent applied at cutting-time will produce a noticeable improvement, but we would recommend a heavy coat of stable-manure applied each fall, winter or early spring, in order to feed the roots during summer growth for the following year's crop.

In the spring take a cutaway or disc harrow and work in thoroughly the manure and dead Asparagus tops. This will leave the bed in fine condition for cutting, as, to start with, the bed should be about level. Some growers object to turning under the dead Asparagus tops with the manure, claiming that the seed will grow and make a mass of worthless, small Asparagus, to ruin the bed. This would, no doubt, be the case where beds are allowed to run wild and take care of themselves from cutting time to cutting time again; but where a bed receives proper care and cultivation there will be no trouble from this source. After the bed has been cut a few times, and weeds start, plow up to it lightly with a one-horse plow, and go over it with a light harrow or Universal weeder, to smooth the surface a little. Repeat the operation of plowing up to and harrowing down each week during the cutting season or as soon as the weeds start. These plowings will gradually work good ridges above the rows by the end of the cutting season.—American Agriculturist.

THE PAST AND PRESENT OF CANADIAN HORTICULTURE.

To the Editor of THE HORTICULTURIST.

SIR,—In the year 1852 I entered the employ of Messrs. Bissell & Hooker, proprietors of the Commercial Nurseries at Rochester, N. Y., as Superintendent. I was not 16 years of age when I assumed the position. For some years previous I had worked in the nurseries of John J. Thomas, of Macedon, N. Y. Mr. Thomas was for many years editor of the Country Gentleman.

In the fall of 1853 I first visited Canada, to take charge of a large delivery of trees at Dunville, Cayuga, Paris, Brantford and St. Thomas. Messrs. Bissell & Hooker at that time had a large trade in Canada, from Fort Erie to Southampton. In 1855 I purchased the interest of Mr. Bissill in the commercial nurseries, and with Mr. Henry E. Hooker organized the firm of H. E. Hooker & Co. In this way I became early interested in the growth and progress of fruit culture in Canada.

About 1855 I made the acquaintance of Dr. Beadle, who had given up a large law practice in New York to take charge of his father's nursery at St. Catharines. Few men have been more sincerely devoted to horticulture than Dr. Beadle. He was a frequent and always most welcome visitor at our home in Rochester. In 1861 I went to Oshawa to reside, not long after the Canadian Fruit Growers' Association was organized, and I became a life-member. I well remember the first number of THE HORTICULTURIST. It was a modest monthly, for the field then was small and new. It has steadily and persistently done its full share in enlarging the field, and I rejoice that its work has been effective from the beginning. It is now what one of my friends calls a "meaty" journal. It is full of practical matter. It aids the fruit grower to attain success from the time he plants the tree until the fruit is marketed. In my family it is always a welcome guest.

In the winter of 1859 I visited Nova Scotia. I sailed from St. John, N. B. to Annapolis, got in a pilot boat in January, and then drove up through the Annapolis Valley to Kentville, Windsor, Amherst, Truro, and on to Halifax. I went to see if there was any considerable demand for fruit trees. The Treaty of Reciprocity was in force, and the potato was king. Fruit growing there was in the infant stage. With free access to the market of the New England States, the Annapolis Valley would be one vast garden for choice fruits and vegetables. Cold storage has almost annihilated distance in the shipment of green fruits. We now get fine fresh-looking strawberries in January, from Florida. They should come in from the Annapolis Vallep in July, and command a large price. The intelligent American fruit culturist, with the aid of scientists, cold storage, railways and fast steamships, will have the whole world for a market in the near future, if he will only remember that quality and condition are prime factors in securing a liberal demand for his labor and skill. Prime Patrick Barry and Easter Beurre pears from California, are still to be had at from 6 to 10 cents each. They are well worth the money if one can afford the luxury.

FRANCIS WAYLAND GLEN.

Brooklyn.

CALIFORNIA LETTER.

SIR,--The February number of the CANADIAN HORTICULTURIST is received, for which, please accept thanks. You must have a very enterprising class of people to have such a large and flourishing Horticultural Association. I judge from your magazine that much interest is shown in flowers, plants and trees in your locality, and wish that other places would follow your good example. It shows a great refinement where the people desire to beautify their homes with Nature's choicest gifts.

It always gives me pleasure to read of such work being done, for I am an ardent flower lover, and can thoroughly appreciate the pleasure and happiness a community must take who work in harmony to beautify their homes and the town or city in which they live.

I see you give considerable space to cactus, a class of plants in which I take great interest. The more one becomes acquainted with them the more fascinating they become and the greater is the desire to make a collection.

I trust that your society will continue to prosper and, you certainly have my best wishes and congratulations.

THEODOSIA B. SHEPHERD.

Ventura, Cal.

THE MOST EXTRAORDINARY OF MEN.

The gardener is the most extraordinary man in the world because no man has no business upon thyme, is master of the mint, and raises his celery every year. And it is a bad year indeed that does not produce a plum. He meets with more boughs than a minister of state. He makes raking his business more than his diversion, as many fine gentlemen do, but he makes it an advantage both to his health and fortune, which is the case with few others. He indulges in his own pleasures, and though he is plain in his own dress with his bachelor's buttons, yet he encourages his cox combs with princes feathers, greatly admires the pride of London, and with pleasure observes his love lie a bleeding under a weeping willow. His wife, notwithstanding, has as much of lad's love and heart's ease as she can desire and never wishes for weeds. Distempers fatal to others, never hurt him, for he walks the better for the gravel and thrives most with a consumption. He is nature's assistant and is as famous for his balm of Gilead, female balsams, and genuine drops as an apothecary, and his thrift abounds by his honesty. He is a great antiquary, having in his possession, Adam's needle, the tree of life, Jacob's ladder, Solomon's seal, the holy thorn, Venus' looking glass, the arms of France and crown imperial. He is well acquainted with the globes, and has crossed the line oftener than any mariner in Great Britain. He is the king of spades, and is happy with his queen, has more laurels than Alexander the Great, and more bleeding hearts than your beautiful Queen Mary. He can boast ladyship, but his greatest pride, and this world's envy is that he can have yew whenever he pleases.— New London Magazine, Oct. 1785. Furnished by R. CAMERON, NIAGARA FALLS.

HARDY GRAPES.

AT the meeting of the Massachusetts Horticultural Society, for discussion, Dr. Jabez Fisher of Fitchburg read a paper on "Hardy Grapes," of which the following is a summary:

Dr. Fisher purchased his first grape vine, a Concord, forty years ago. His first stimulating success was in 1865, when, with a dry, favorable season, the crop was enormous—four and a half tons upon three-fourths of an acre—which were well ripened and brought a high price; but he has never been able to equal this again. Since 1871 large crops have generally, though not always, alternated with small, but through judicious thinning the quality has been satisfactory. In his whole experience there have been three total failures—in 1860, 1875 and 1888.

In considering the outlook for the future, Dr. Fisher said that the expediency of any person's taking up grape-growing depended on circumstances. He would not advise a novice to start in the business, but if a person has a vineyard well situated and in good condition, he thought it wise to attempt growing the best possible quality of product.

To attain the quality that commands the highest price calls only for a few conditions, but they are imperative and as important to the amateur with his few vines as to the extensive cultivator. His experience, coupled with extensive observation, had taught him that the best soil is a strong one, inclining to clay, but not too heavy, and well drained, either naturally or artificially. A gentle southern or south-eastern slope, near to but not on the summit of elevated land, is desirable. Shelter of land, buildings or trees is useful. No especial preparation of the soil is necessary. A field in fit condition for corn is also suitable for grapevines. Two-year-old plants, if they have been transplanted at one year and the roots shortened in, may be best, but otherwise he would choose one-year-olds. Spring is the preferable time for planting, and the earlier the better, provided that the soil is friable. Cultivation should take place as soon after every packing rain as the surface will work mellow. No training is necessary the first year. as soon as the leaves fall the vines should be cut down, leaving two or three buds only.

The second year a temporary stake should be used to support the growing vine which needs no other training and no pruning, except that a single cane only is allowed to grow. The autumn pruning is like that of the first year.

At the beginning of the third season a permanent support should be provided, according to the system of training that is to be adopted, whether trellis, stakes or otherwise. The object in view during the season is to grow from this cane for fruitage the subsequent year. When the length of six feet is attained this cane should be stopped by pinching off the point. All laterals that grow from this cane should be pinched so close that they may not divert growth from it, but otherwise there should be full freedom of development. If the growth should be satisfactory, i. e., if it makes a cane from five to six-sixteenths of an inch in diameter, it will be safe to allow it to fruit for half its length, and it should be cut back to that point at the fall pruning. If less vigorous, the whole should be cut away as in previous years. Nothing so injures a young vine as to allow it to carry a crop of fruit beyond its capacity; it is like putting a boy of fifteen or sixteen to perform a man's labor.

The essayist was confident that more failures and discouragements arise from this mistaken policy than is generally believed.

The system of pruning described is what is known as the renewal system, the vine being, so to say, renewed each year, and thus kept perpetually young. As the fruiting wood is cut away at the annual pruning there is no doubt that the particular roots which have supported it mostly die, while the new, vigorous ones, corresponding to the new cane, remain to carry the crop at the next fruitage; thus in reality only the trunk of the vine is permanent, whatever its age. This mode of treatment insures larger clusters, and if the fertility be ample and the fruitage not too heavy, the berries will also be large with a heavy bloom, which is at once attractive in market and an evidence of high quality.

If the land is in good heart, and no other crops are grown upon it, no fertilization will be required before third year, but otherwise it should be supplied from the commencement. Barnyard manure has always been looked upon as a complete fertilizer. It consists largely of hay, with more or less grain, ground fine by the animal, which through digestion, withdraws a small percentage of nutriment from it and excretes the remainder. If all the liquid and solid matters are saved they constitute a very complete fertilizer. The solid portion alone, however, is incomplete or one-sided in composition, as is also the liquid, which is the other side. Barnyard manure, like all organic substances, is available only after its decomposition, which requires two or more years for its completion, but it is a serious economical question whether it be best to apply costly materials on which dividends are necessarily postponed. Chemistry shows that the more valuable constituents of barnyard manure can be supplied in commercial substances in better forms, at a cheaper rate and with surer results. The average composition of fruit trees and vines, together with their fruits, as shown by many analysis, led the essayist to adopt a fertilizer composed according to the following formula:

225	pounds	high grade sulphate of potash.
100	"	sulphate of ammonia.
200	"	nitrate of soda.
200	"	South Carolina floats.
80	"	Sulphate of magnesia.
75	"	plaster.

Total, 850 pounds for each acre annually.

These ingredients are nearly all quite soluble and the vines are able to appropriate them as required through the growing season. They should cost $16 or more, according to the quantity required and the facilities for obtaining them.

The essayist stated that his experience in growing grapes for the market had been limited to the Concord. As a final word he emphasized and insisted upon the two indispensable conditions of the highest success, which also apply to the growing of all the larger tree fruits as well as grapes. One is the necessity of ample annual fertilization, and the other is the severe thinning by which quality of product and consequently high price are to be realized and maintained.

GROWING POTATOES—PREVENTING DISEASES.

THE abundant crops of 1895 and '96, with an overstocked market and low prices, had the influence on many growers of becoming indifferent in caring for the crop of 1897, the result of which is a light yield of poor quality.

The heavier soils are not capable of producing the best quality of potatoes at any time.

The lighter and more suitable soils did not give a satisfactory yield and quality in 1897 from the plants being killed by blight long before completing their growth.

The writer invites the indulgence of the reader in giving our experience on the subject briefly.

No attempt will be made in this short paper to describe the diseases of the potatoe, for this is done in a very practical way in the Farmer's Bulletin, No. 23, of the Central Experimental Farm, Ottawa, by Prof. John Craig.

Rotation.—We practice a three year rotation as nearly as possible on all our land except what is down to pasture and fruit, and depend on medium red clover to keep up the fertility.

It may be said that we go through our rotation backwards, or the opposite way from the common practice.

Most people apply manure to the land before the hoed crop. We top dress in the fall and winter after the corn, potatoes or whatever crop we use, hauling and spreading direct from the stables whenever the ground is frozen enough to bear a team. Our object is to mulch and fertilize all we can to insure a good catch and growth of clover which is sown with the grain crop.

All corn is cut for the silo and all straw used for feed or bedding is cut so there is no clogging of implements in working the manure in the surface soil with harrow and cultivator where it remains two seasons.

Cultivation is commenced by ploughing the clover sod late in the fall, and harrow, cultivate and gang in the spring, and when ready to plant in May, strike out and plough in wide lands dropping fresh cut seed 15 x 36 inches in every third furrow, six inches deep.

Two good hands will cut with a curved knife and drop the seed as fast as the ground can be ploughed with one team.

Harrow cross-wise and length-wise every few days up to the time the plants are three or four inches above ground.

If the work has been well done up to this time there will be little need of a hoe in the field.

Scuffle on the level, for the more ridging is done the surface will be exposed to be dried out by sun and wind, and the greater amount of soil moisture will be lost.

We scuffle once a week or as soon as the soil is fit to work after every shower up to the time the plants shade the ground, deep at first, finishing at an inch and a half.

If from drenching rain or any cause the soil gets so firm that the tubers are showing above the surface, we use the hillers on the scuffler covering the row enough to keep them from being sun burned as the common phrase goes, but it does not require the sun to make a potato look green, the light from a small cellar window will destroy the quality of the best potatoes. To prevent this we keep the bins covered with a mat or anything that will exclude the light, and the quality will compare favorably with the ideal way of wintering in pits.

(*To be continued.*)

Doings of Other Societies.

WATERLOO.—Considering the many counter attractions, the audience gathered in the Town Hall here, last Thursday evening, to listen to Mr. Gammage's lecture to the Waterloo Horticultural Society, may be considered satisfactory. The lecturer, a practical florist, in plain language that was listened to with marked attention, gave a clear statement of facts. Commencing with house plants he showed how to obviate and evercome the dry air of our dwellings, which is so injurious to plant life, the different classes of plants in use, the rapidly increasing taste for ornamental and foliage plants, palms, ferns, feius, dracaenas, etc., plants for vases and hanging baskets, bulbs for winter blooming, garden plants, annuals, seed sowing, transplanting, and how to secure the best results with herbaceous perennials, cultivation and pruning of flowering shrubs, roses, etc., plants for shady places, the best and most easily grown climbers, fertilizers and their application, watering, prevention of, and remedy for insect pests, were all in turn discussed and explained. The audience showed their appreciation and interest in plying the lecturer with questions at the close, all of which were answered satisfactorily.

ORANGEVILLE.—The lecture by Mr. Wm. Bacon, of Orillia, on "Indoor and outdoor flowering plants," was much appreciated by the members of the local society and the public generally. The lecturer occupied about an hour, and afterward a large number of questions were handed in and answered to the satisfaction of all concerned. The platform was well decorated with greenhouse plants, which were made use of by the lecturer in illustration of his subject.

KINCARDINE.—The number of our membership has now reached 96. We expect to get 4 more, but they will be too late to share in your plant distribution, but they will get a big dollar's worth without it. Mr. Bacon's lecture was much appreciated. A vote of thanks was tendered the Ontario Fruit Grower's Association for their liberality in sending the lecturer, and the plants for distribution. —JOSEPH BOOKER, Secretary.

PICTON.—SIR,—Thinking you will be interested in the Spring distribution of our Horticultural Society, I enclose you a packet of seeds we had put up in Germany, and send you as well a list comprising all that was included in the distribution, the wholesale price being about $1. Eight papers seed, 8 papers sweet peas, 1 single begonia bulb, 1 double begonia bulb, 1 gloxonia bulb.—WALTER T. ROSS.

A Lecture Tour Among the Societies.

SIR,—I thought it quite possible that you might be pleased to receive some short notice of the meetings assigned to me under the auspices of your association, and, therefore, select the following from my note-book :

It is only just to remark that in every place your representative was shewn the utmost courtesy and kindness and many expressions were heard of the high appreciation of the Horticultural Societies at the very generous action of the executive of O.F.G.A. in providing lectures on such liberal terms, and thus encouraging an increased knowledge of the many plants, bulbs and flowers. It is the varieties, nature and requirements of very noteworthy that in such gatherings assembled you have the very cream of the communities as to refinement and intelligence—therefore the meetings are full of interest and mental activity, and always most pleasurable and elevating in their character.

THORNBURY.—On March 22nd I visited Thornbury and Clarksburg and met many old friends and a live membership of the Horticultural Society. There are here, to the population, perhaps, more ardent lovers of the beautiful in plants and flowers than any other place of its size in Ontario, and some of its citizens have beautiful specimens in ferns, palms, gloxinia, begonias, geranium, etc., and others less practiced are very eager to learn the secret of their fellow-members' success. Attendance very good, and interest keen as indicated by the pertinent questions asked concerning the many kinds spoken of, their treatment, etc. Insect pests were widely dealt with. We bespeak for this Society an increased membership, with the full determination to attain the greatest success in floriculture.

I might say, also, that this people make bright and cheerful the "place of the dead" in a very creditable and marked degree, as we know from past experience. In summer they make the cemetery their special charge. In this it would be well for many larger places to follow their example.

MEAFORD —March 23rd, I reached Meaford in good time, and making the acquaintance of directors and members, was glad to find a very much interested people on the subject of floriculture in this beautifully situated town. The formation of the Horticultural Society has done much to awaken an interest in plants for the house, garden and park The Secretary, President and Directors, are a most courteous group of gentlemen and will report new members right along. Mr. Cleland, Ex-M.P.P., made, in an opening address, some timely remarks anent the beautifying of the public park and enlisted the sympathy of the Society and their aid for this object. We had a capital meeting and I believe much satisfaction was felt at hearing of best proved methods of growing, renewing, watering and pruning of the many different kinds of plants and bulbs. By the way, there

will be an increased planting in this department hereabouts, I am sure, from evidences in the gathering.

OWEN SOUND was the next place to visit. In this picturesquely situated and fast growing town your Society's membership, though not large, has a deep, intelligent interest in the work of the society and the meeting was, I believe, profitable to all. Ven. Archdeacon McMuller occupied the chair and opened the meeting in good spirit. For nearly two hours of address and answering of queries a lively interest was displayed in the subject of floriculture, as they sought guidance for the watering, care, propagation, growing from seed, pruning and keeping of their plants from season to season. Many lovers of the great families of bulbous plants are here, and we believe that in this locality many hardy border plants and gorgeous flowering lilies may be successfully grown. Perpetual Roses should find a congenial clime and soil. We forecast a great future for Horticultural Society and town.

ORANGEVILLE.—We closed the first week's work, March 25th, at Orangeville. Arriving in good time I had an opportunity of making the acquaintance of a number of citizens and the officers of the Horticultural Society. This being the second annual meeting a good deal of enthusiam prevailed, and very nice preparations were made for the evening. The local greenhouse men, Messrs. Maun and Nicholson, furnished plants as specimens, and there did not seem to be a director that was not a worker and willing to give time and material to decorate the Town Hall, hence a full house of several hundred people. Music furnished by the orchestra in good style, also the gramophone. Mr. Walsh made a first-rate chairman, with a strong and pleasing personality and happy address. The various officers seem to be well and wisely chosen; gentlemen eminently fitted by their ability and natural love of the objects of the Society and with a set purpose to attain the best ends before it. They advertised their meeting well and systematically—first by local papers, lastly by hand-bills—then announcing it in every school. Result: a large house thoroughly interested and willingly listening for about two hours to address and replies to questions, the subject being almost inexhaustible to enthusiastic lovers of nature. Here! Mr. Woolverton, I am of opinion one of the best organized, successful and most aggressive Horticultural Societies in Ontario. W. E Judge, Sec, John McLaren, Pres., and Mr. Walsh, Vice-Pres., are in their right place and deserve the sincere thanks of the community for their earnest efforts. The ladies evinced an intelligent acquaintance with many varieties of plants and their requirements. Success to Orangeville.

NIAGARA FALLS.—Had a full afternoon to make acquaintance with the refined and kindly people of this historic place. Evidence of the love of the many beautiful varieties of plants now to be had was to be seen in almost every home. The directors are a live lot of men, full of push and faith, and do things in a business-like way excepting, perhaps, a little more hand-bill advertizing might make for the better. The meeting, though not large, was very select. The Rev. Canon Bull occupied the chair, and very gracefully put the objects of the gathering forward and gave a right tone to the evening. There were really some very nice specimens of Genista, Abutilon Geranium and other plants, grown by Mr. G. Pyper, who well understands the art. Also cut flowers, by Mr. Cameron of the park, lovely trusses of geraniums, heliotropes, gorgeous spikes of cannas in many colors, etc. They here heard gladly what we had to say and elicited by questioning much information and volunteered freely their own experience.

KINCARDINE.—On March 31st, the annual meeting was held. Our visit was very pleasant and the people seemed to enjoy much what was done. The officers are aggressive as will be seen from the fact that they now have a membership of 98. This has been accomplished by energy and perseverance on the part of the directors. There are here those who are determined to succeed. Much intelligence was displayed in the discussion of plant life, etc. They were very sincere and hearty in their expression of thankfulness to the Ontario Fruit Growers' Association for the generous extension of help to their Society. The Society will accomplish much in this vicinity to awaken a deep interest in gardening and plant culture. It is a pleasure to meet a people like this.

MIDLAND.—At Midland we had a large and enthusiastic gathering It was to be regretted that several of the officers were indisposed. However, Miss M. Tully the Secretary, is a host in herself, and Mr. Cook, Vice-president, filled well the chair. The meeting was opened by songs well rendered by Mr. Hunter, and at intervals by two ladies whose names (unpardonably) I have let slip, who were in "good voice" and evidently favorites. There was a keen interest taken in the direction of finding out the secret of plant culture in the house, specially, after that from the address delivered they discovered that they had fallen into the error of giving plants too large a pot, etc. Many came to express their pleasure and satisfaction with this information so generously given by the O. F. G. Association and hoped for future visits—especially as this evening was spent almost exclusively among the family of bulbs at their request. The Midland people have the elements of a large and prosperous Horticultural Society.

WM. BACON, *Orillia*.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

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ADVERTISING RATES quoted on application. Circulation, 5,000 copies per month.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

Notes and Comments.

NOT EIGHTY PER CENT. AMERICAN STOCK.—Dr. Fletcher wishes to correct statement on page 109 that "80 per cent. of our fruit trees were imported from the United States." What he said was that "80 per cent. of the surplus stock of American Nurseries was shipped into Canada."

MR. R. B. WHYTE, our director at Ottawa, has won the gold medal, the first prize at the Ottawa Camera Club exhibition. We hope to have many samples of Mr. Whyte's work as illustrations for our journal this summer.

THE GRAPE was the subject of an address before the Goderich Society by Mr. W. Warnock. He gave an interesting history of the grape vine, and explained the extreme importance of this fruit as an article of diet.

ANNUALS FOR THE AMATEUR'S GARDEN.—This is the title of an excellent paper, written by Mr. R. B. Whyte, of Ottawa, and read by him at the Annual Meeting of our Association. Two or three selections only will be given here, and will serve to cause our readers to take up our Annual Report, and read the whole.

"For the best display from July to November, we cannot do without some of the summer bulbs, such as Tigridias, Gladioli, Cannas, Dahlias, etc., and a selection of the Herbaceous perennials, but our main dependence for the gorgeous show of Color that is possible during that month is upon the Annuals.

There is no half dozen perennials that can be named that will give us one quarter the show of bloom, that we can get from the Dianthi, Poppies, Sweet Peas, Phlox Drummondi, Asters, and Scabiosa.

Plant as large a variety as your space will allow. There are some old favorites that we want every year, but in addition to these it adds greatly to the interest of our gardens to try some new sorts each season, even though they do not come up to the highest standard. I would not like to be without Dianthus, Escholtzia, Poppy, Candytuft, Mignonette, Phlox Drummodi, Schizanthus, Stock, Sweet Pea, Snap Dragon, Salpiglossis, Aster, Scabiosa, Nasturtium, and Pansy. If I were limited to fifteen kinds, these are what I would grow; they are all quite hardy, and will give a great profusion of bloom all summer and fall, from seed planted in the open air, without the assistance of the hotbed or greenhouse.

GINSENG.—Bull. 27, Dept. of Agric., Pa., is devoted to the cultivation of this plant. This is encouraged because such quantities are annually shipped to China, It grows wild in many places, and may be cultivated quite easily. Not like our fruits, its value is advancing instead of declining, for in 1858 it was only counted worth 52c. a lb., while in 1896 it had reached a value of $3.86 per pound.

Ginseng has no medicinal value here, but the Chinese regard it as a panacea for all weakness of mind or body.

THE LONDON EXHIBITIONS LIMITED, is the title of the managers of the Greater Britain Exhibition, to be held in London, Eng., from May to October, 1899. The affair is an effort to encourage commercial intercourse between the Colonies and the Mother Country. All such means of encouraging commerce should be turned to the best account possible, and should this project be worthy, we trust our authorities will earnestly cooperate in its success.

THE WICKSON PLUM.—In his Bulletin 139, Prof. Bailey says: "I am impressed with the Wickson, and expect to find it an acquisition. The fruit is very large, deep maroon red, firm and long keeping, with an aromatic almond-like quality, and deep dull yellow meaty flesh. It has the habit of the Prunus Simoni, being the narrowest grower of all the Japanese plums we have tested.

POTASSIUM SULPHIDE is recommended in Bulletin 133, N. Y. Expert. Station, as the best remedy for gooseberry mildew. Very early treatments were found to give the best results. Such treatment with weak solution, 1 oz. to 3 gals. of potassium sulphide prevented mildew on all but 5 per cent. of the fruit, while the later treatments gave two or three times as much mildew. With the stronger solution, 1 oz. to 2 gallons, the early treatment reduced the mildewed fruit to 66 per cent., while with later applications the injury was nearly twice as much. The cost of this article is 18 cents a pound, and it should be first applied very early just as the buds are swelling, at the rate of 1 ounce in 2 or 3 gallons of water, and the treatment repeated every ten days or two weeks.

AN INSPECTION FEE has been imposed by the Horticultural Board of British Columbia, on all Nursery stock; on consignments of 100 trees the fee is $2.50; 100 to 250 trees, $3.50; 250 to 500 trees, $4.50. If found infected, a charge of 50 per cent. is added for disinfection. On fruit the minimum fee is $1.00 on any sum up to $33.00, and 3 per cent. on any sum over $33.00 in value.

THE CANADIAN HORTICULTURAL MAGAZINE of Montreal for March has

just come to hand. It contains an illustrated article on the Gardens of Montreal, another on Our Native Orchids, and other articles. "Chance Cosmopolitan Flowers" is the subject of the opening article by Mrs. Robert Jack, whose contributions are always bright and interesting. From the latter we quote the following regarding the Peony.

"Would an old fashioned garden deserve its name lacking a Peony? How wonderfully that plant has changed, I will not say improved, for that would be to libel the dear old red Peony we all know so well. But the beautiful shades that have been revealed by cultivation are a delight to the æsthetic taste. The name is from "Paion" a Greek name for Apollo, the god of medicine, as the roots were considered to be antispasmodic. The white Peony is a native of Central Asia, and the Mongolians use the root in their soups and grind the seeds to put in tea. There is a true Peony in the same old-fashioned garden. It is expected every spring that it will have succumbed to the severity of the winter, but even last season, so hard on many things, it came out uninjured."

FRUIT IN CALIFORNIA.—A friend of Mr. Nigel Keep, writes him as follows:—The prospects for the entire state of California this year are very poor indeed. In consequence of lack of sufficient rain, and the very heavy late frost, the fruit crop of nearly every county is a failure, from the county of Syskigon to Santiago, a very unusual occurrence. The peach crop is entirely swept away over the whole state; apricots, prunes, pears have shared the same fate. There may be some apples. On our farm the destruction is complete—there is nothing left. Last year we had plenty of strawberries in April, but this year there are none. They may bloom again and probably we will have berries in May."

DR. BEADLE has sent us an interesting article on "New Creations in Fruits and Flowers," for June No. and one on "A New Profitable Canadian Industry" for July No. It will be remembered that Dr. Beadle was the first editor of this Journal and his writings on horticultural topics are always full of value.

MR. A. E. MICKLE has contributed an interesting article on "Rambles Around Toronto," illustrated, and another on "Thinning Fruits."

PHENOLOGICAL OBSERVATIONS AT NIAGARA FALLS.

DATES OF SAME.

	When First Seen.
Alder Alnus incana shedding pollen	16-4-96
" " " " "	3-4-97
" " " " "	16 3-98
Red Maple Acer Rubrum in flower	20-4-96
" " " " "	8-4-97
Snowdrops in bloom	30-3-96
" "	7-3 98
MIGRATION OF BIRDS	**Going North.**
Wild Swans	26-3-96
" "	1-3-98
Wild Geese, first birds	27-3-96
" " " "	9-3-98
Wild Ducks, first birds going north	28-3 96
" " " " " "	15-3-97
" " " " " "	6-3-98
Red Winged Black Bird, Agelaius Phœniceus	28 3 96
" " " " " "	12-3-98
American Robin, Merula Migratorius	28-3-96
" " " "	15 3-97
" " " "	8-3-98
Song Sparrow, melospiza fasciata	28-3 96
" " " "	18-3 97
" " " "	1-3-98
The piping of Frogs first heard	20-3-97
" " " " "	7-3-98

The above will show the difference in the past three springs.

R. CAMERON.

Niagara Falls Park.

Question Drawer.

We shall be glad to answer all questions relative to Horticulture, Floriculture, and Forestry, in these columns, but cannot undertake to send answers to such questions by mail.

The following questions 1001 to 1010 were asked by some of our Horticultural Societies, and answered by Prof. H. L. Hutt, O.A C., Guelph.

Umbrella Plant.

1001. What care does it need in respect to light, heat, moisture, repotting, etc?

Umbrella plant, or cyperus, like many other plants with inconspicuous or no flowers, may be grown quite successfully in a north window when room cannot be spared for it in southern windows. It does well in the ordinary temperature of a living room, from 60—70 during the day, and 10—15 less at night. It requires plenty of moisture, and is the better of being given plenty of room in the pot.

Rex Begonia.

1002. What is the cause of its dying in spite of close attention?

It should not be forgotten that this plant, like most others, requires a period of rest after its season of vigorous growth. During the winter months it should be rested by keeping it in a cool place, and giving it no more water than is necessary to keep it alive. After resting it should be repotted, put in a warmer place, and given water enough to sustain vigorous growth. New plants should be propagated from time to time, that the older ones may be thrown away after they have been grown two years.

Primula.

1003. What should be done with it after its flowering season?

Throw away old plants after they have flowered, and sow fresh seed this month (March) for plants to bloom next winter.

Hypericum Moserianum.

1004. Does it require shade, or will it do better in full sunshine? What protection does it need in winter?

We have not grown this variety, but judging from those we have grown, we would give it full sunshine and a covering of straw or long manure for protection in the winter.

Tree Peonies.

1005. Are they good for house plants in pots?

These are sometimes grown under glass in the Old Country, but we have never heard of their being so grown in this country. After being forced into bloom in the house they are useless for a similar purpose for two or three years afterwards.

Fritillarias.

1006. Are they good for culture in pots? How many in a six inch pot? Is F. recurva the best.

Fritillarias may be forced for winter bloom the same as hyacinths or tulips, but they are more satisfactory for outside culture. Fritillaria aurea and meleagris are recommended as suitable for pot culture. One bulb is sufficient in a six inch pot.

Plumbago.

1007. Will Plumbago Capensis and P. O. Flore Pleno make good window plants, or house plants for the winter?

The Plumbagos mentioned make very satisfactory house plants when properly handled. As the flowers are always produced on the new growth, the plants should be cut back every two or three months to induce the formation of new growths.

Cocos Weddeliana.

1008. Would this palm make a desirable centre piece for the dining-room table? To what height does it grow?

Cocos Weddeliana is one of the handsomest and most desirable palms for table decoration. It may attain a height of four or five feet, although we seldom see specimens over two or three feet.

Kentia Belmoreana.

1009. Is this a good palm for general house culture? Would be a suitable one for a society collection?

Kentia Belmoreana is an excellent palm for general house culture, and would do honor to any collection.

Palms From Seed.

1010.—Can palms be grown from seed? Are the Kentias the best class to grow?

Palms are grown from seed, but they are slow to germinate and require a higher temperature than the amateur would likely be able to give them. On this account I am inclined to think the majority of amateurs would likely loose interest in them before the plants amounted to much. The Date Palms, however, may be easily grown from the seeds of the dates of commerce.

The Kentias are among the best palms for general culture. Other desirable ones are Areca lutescens, Cocos Weddeliana, Latania Borbonica, Phoenix, and Seaforthia elegans.

✻ Open Letters. ✻

Mr. Forbes' Garden, Orillia.

SIR,—Mr. Blackstone of The Times, I understand, has sent you the cut you asked me for. Reading last summer in the Magazine, your request for photographs, I had laid aside three, intending to send them to you, but in the mean time Mr. Blackstone asked me for one of my house. I gave him the three intended for you, on looking for others to replace them, I could only find the two I sent you, the third might perhaps have been suitable for a vignette, cedar hedge and trees. The house is very much hidden by the trees. You will notice a little to the right, a Weeping Elm. I planted a pair in 1882, but one of them grew too much upwards and spreading, so I cut it down, since the photo was taken.

My taste inclines rather to Nature than art, consequently I have cultivated trees and lawn more than flower beds, not having room for both: maple, spruce, cedar, Cut-leafed Horse chestnuts, maple, Cut-leafed Birch, Mountain Ash, I tried the Kilmarnock Willow but they died. I have quite a number of shrubs which came from you, but unfortunately did not keep note of their names. I have also a fine white grape vine which I got from you about fifteen years ago.

W. J. FORBES.

Orillia, Feb. 15th, 1898.

Foliage for Bouquets.

SIR,—I noticed in the February number of your journal, you have an article entitled "Foliage For Bouquets." No doubt there are hundreds who are continually worrying themselves almost to death over this vexed question. I, myself, for a long time was bothered as to what would look well in a bouquet of flowers. I think I solved this problem, however, and for the last two seasons I planted a five cent package of Cosmos each spring. This is ornamental as well as useful, furnishing us not only with an abundance of the most beautiful green foliage, but it also gives us very beautiful dahlia-like flowers (single) for the bouquet. If any is desirous of a beautiful foliage there is nothing easier to grow, and nothing cheaper, or more beautiful than cosmos. I trust that any reader who really want something pretty in this line will get a 5 cent package of the mixed which grows very readily, and I am sure that they will not be sorry for having done so.

There is another plant which can be very easily raised from seed and which is also very ornamental and will furnish us with bushels of beautiful foliage for bouquets. I refer to eschscholtzia. This can also be bought for 5 cents a package and is simply grand to mix in with flowers.

C. HIRSCHMILLER,
23 Simcoe St. N., Hamilton.

"HUMBOLT." (Slightly less than life size.")

THE
CANADIAN HORTICULTURIST.

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NEW CREATIONS IN THE VEGETABLE KINGDOM.

CREATIONS is here used not in the sense of bringing into existence something out of nothing, but by new combinations of that which exists to produce a new object. Doubtless there are limitations to man's power to create even in this sense, but as yet we do not know where they lie. Confining ourselves to what man has produced in new plants, we shall see wonderful creations which open to us a vista of possibilities to which we dare not set a limit. Space at our command will only admit of a few examples, and with only one exception we will confine our attention to what has been done in this Province of Ontario, where every statement can be fully verified.

The late Charles Arnold of Paris, perceiving that the dwarf peas of our gardens were sadly lacking in the rich delicious flavor of many of our tall-growing varieties which required the often inconvenient care of being furnished with support, set himself to produce a dwarf pea having all the desirable sweetness and flavor of the tall-growing sorts. The result of his work was the well-known dwarf pea, the "American Wonder," which was bought by a seedsman who felt himself so greatly benefited by his purchase that he subsequently presented Mr. Arnold with a valuable gold watch. One more of his creations, and this in the line of our cultivated fruits; he undertook to produce an apple having many of the good qualities of the Northern Spy and the early bearing habit of the Wagener. His labors have given us the "Ontario" apple, to the value of which our energetic Director, Mr. Thos Beall, of Lindsay, and our fruit experimenter, Mr. Walter Dempsey, of Hastings, can testify.

Mr. H. H. Groff, of Simcoe, has given us many very beautiful creations in gladioli and cannas. His gladioli are widely known and highly prized by growers of this late summer flower,

(FIG 1354.—A branch of *Pyrus baccata* in fruit, half natural size.

many of which surpass in vigor and perfection of form and coloring any hitherto known. His dark foliaged cannas of the French type excel in quantity and vigor the latest continental introductions. About a dozen of these creations are described in his catalogue for 1898.

Mr. Wm. Saunders, Director of the Experimental Farms of the Dominion, has produced new varieties of wheat, barley and peas. From the report of 1896 we gather that seven of the fifteen varieties of cross-bred spring wheat rank among the twelve sorts which averaged the heaviest crops at the six experimental farms. One of them, the Preston, a cross between the Ladoga and Red Fife, in a three years' test at all these farms, exceeded every other sort by two bushels per acre, and at the Central Farm, Ottawa, by three bushels per acre. The object sought has been achieved, namely, to increase the number of vigorous and productive sorts of high quality and early ripening. In barley, where it was sought to induce earlier ripening in the two-rowed; and in the six rowed longer heads and a greater propensity to stooling; in addition to increasing the number of vigorous and productive varieties, remarkable results have been secured. Seven of the new creations in the two-rowed appear in the fourteen sorts that in the tests at all the farms took rank among the six most productive, and four in the six-rowed out of the fifteeen. In peas, sixteen of the cross-breds take their place among the thirty-two sorts which ranked in like tests as of the twelve most productive.

Seven years of experiment in our North West has demonstrated that the hardiest fruit trees obtained from Russia and elsewhere give no reasonable hope of

(FIG. 1355.—A branch from one of the seedlings of *Prunus pumila* grown at the Central Farm by Mr. Craig.)

yielding fruit in satisfactory quantity in that climate. One Siberian crab, Pyrus baccata, yielding fruit not much larger than a cherry, has endured the climate for five years at Brandon and Indian Head. Mr. Saunders has taken in hand to improve this crab in size and quality, and has a number of cross-bred seedlings, the fruiting of which he awaits. (See Fig. 1354.)

He is also working to improve the hardy Sand Cherry, *Prunus pumila*. (See Fig. 1355.)

So much for our Canadian workers in this most interesting field. A brief glance at a few of the creations of Mr. Luther Burbank of San Diego, California, who has been working for twenty-five years, must suffice. One of his new plums is named "Golden," a hybrid between the American Chickasaw and the Japanese Sweet Botan. Ellwanger & Barry, of Rochester, N.Y., say of it, "we never saw a more beautiful plum," and S. D. Willard, of Geneva, N.Y., an extensive grower of plums for market, says, "in quality all that could be desired." (See Fig. 1356.)

(Fig. 1356.—Hybrid Plum Golden, and its male parent (both life size) Robinson Plum.

Mr. Burbank says of the tree, "I have never seen a plum tree which perfects so much fruit." His hybrid berry which he named Humboldt, grown from seed of an improved California Dewberry fertilized by the well known Cuthbert Raspberry, is shewn in the frontispiece. Its very large fruit is a dark crimson, exquisite in flavor, unexcelled for cooking or canning.

By fertilizing our common Black Walnut *(Juglans nigra)* with the Walnut of California, *(Juglans Californica)* he has produced a walnut larger than either parent, with meat superior in quality to theirs, and that parts more readily from the shell. The tree is an early bearer and very productive.

His new race of Clematis, the offspring of *Clematis coccinea* with *Clematis crispa*, is a most beautiful production. The plants are vigorous, produce a profusion of flowers from June until frost, which are generally broadly bell shaped, with a beautiful frosted appearance and a blending "of colors and shadings not found elsewhere in the Clematis family." (Figure 1358 is a representation of the flowers of this hybrid.)

These few instances of what has been done in the way of new creations in plant life naturally start the inquiry, *how* has it been done. That our answer may be intelligible also to those who are not familiar with the plant organs concerned in the formation of seed, the

Fig. 1357 —Juglans Californica Staminate Parent. Juglans Nigra. Pistillate Parent. Hybrid Walnut. All Life Size.

indulgence of students of botany is craved while a brief account is given of those organs and of their office. They are of two kinds, one is called "stamens" the other "pistils," and are the only essential organs; when these are present the flower is said to be perfect, though it have neither sepals or petals. Fig. 1359 represents the essential organs of a lily; the organ at the left is the stamen, consisting of two parts, the filament and anther; the one at the right is the pistil, consisting of three parts, ovary, style, and stigma. The filament merely supports the anther, in some flowers is very short; the office of the anther is to produce a quantity of small dust like grains called pollen which are extruded when matured through (Fig. 1360 highly magnified pollen grains.)

FIG. 1358.—CLEMATIS. (Sample blooms of the new race.)

openings which then appear in the anther. The style serves to connect the stigma with the ovary, in some instances it is wholly wanting, and when present varies in length in different flowers. The office of the stigma is to receive

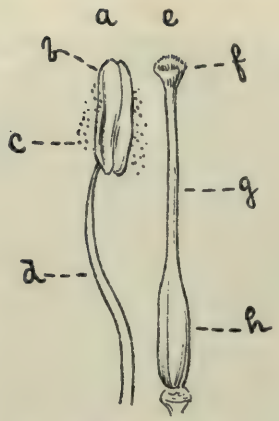

FIG. 1359.—Essential organs of a Lily (Lilium).

a—Stamen. b—Anther. c— Pollen. d.—Filament. e—Pistil. f—Stigma. g—Style. h—Ovary. (After Gray.)

and retain the pollen, to this end it is when mature quite viscid; the ovary is the body within which the seeds are formed, which in their early stage are termed ovules. The pollen. falling on the moist sticky surface of the stigma which is quite naked, that is, not covered as is all other parts of the plant by

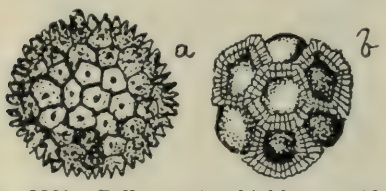

FIG. 1360.—Pollen grains highly magnified.

a—Morning Glory (Ipomæa purpurea). b—Black Oyster-plant (Scorzonera Hispanica).

cuticle (epidermis), absorbs moisture, swells, thrusts out a tube which passes through the stigma, down the style, enters the ovary to the ovule, into which it is supposed to discharge its semi-fluid contents through a tiny opening. When this takes place not only the ovule but also the ovary increase in size and the product becomes a living seed. When this does not take place the ovule perishes. It is important that every one who wishes to produce new plants become familiar with these organs, for they vary greatly in number and form. Frequently the stamens appear in one plant and the pistils in another of the same species. Some idea of the great diversity of form may be gathered from examining. He should also be able to judge when the stigma is in condition to receive the pollen. (See Fig. 1361.)

The operator, having decided upon the qualities he desires to produce, selects for the parents two plants each possessing in a marked degree such qualities that if united in one plant the desired result would be attained; from one of which he will get the pollen with which to fertilize the pistil of the other. It sometimes happens that the pollen is ripe and falling before the stigmas in the flowers of the other plant are mature. In such case the pollen can be gathered into a small vial, care being taken that everything is perfectly dry, then tightly corked and kept in a cool dark place. Pollen absorbs moisture, which results in the extrusion of the pol-

Pollen grains highly magnified.

a—Hollyhock (Althaea rosea). b.—Passion flower (Passiflora carnea).

len tube, or, if the moisture is in excess, in the bursting of the coats of the pollen grain and the loss of its contents. Too much moisture, either as rain or fog at the critical period of infloresence when fertilization should take place, is often the cause of failure of fruit. A soft camel's-hair pencil is an excellent instrument with which to collect pollen, and also to apply it to the stigma.

The flowers to be pollenized must be cared for to prevent other pollen from being deposited on the stigma, both by

FIG. 1361.—Pistil of wheat magnified.

removing all the anthers from that flower before they are mature, and by preventing it from being afterwards brought from other flowers, on air-currents or insects, by covering the flower with fine gauze. Sometimes it is necessary to remove the anthers and cover with gauze before the flowers open, as in the case of wheat, etc. Having secured a pistil free from pollen, it is pollinated by applying to its stigma pollen grains taken from the plant selected for that purpose. The hand-pollinated flower is again covered to exclude any possible interference with what has been done, and the operator waits for the ripening of the seed.

From seed obtained in this way we may expect plants combining in some proportion the several qualities of each parent. Sometimes the seedlings show such combination, or only some of them, or all may appear like one of the parents, or a part like the one and a part like the other; yet when plants are raised from seed of these seedlings they "often break away into various forms and combinations"; or such break may not take place until the third or even some subsequent generation. In experimenting with the progeny of hand-pollination, it is important to so isolate them that their flowers shall not be fertilized by pollen of ancestors. Often the desired result is secured, when the seedlings manifest the characteristics of one of the parents, by pollinating flowers of such with pollen from the other parent.

Here as elsewhere success is not achieved without labor, patience and skill. Mr. Burbank says, "sometimes hybridized or crossed seedlings" (when the progeny of two species, they are called 'hybrids'; when of two varieties of the same species, 'cross-breds') "show considerable or even great variation for weeks and then change at once to one or the other of the original types; or they may show no change from one or the other parent forms until nearly ready to bloom or bear fruit, when they suddenly change in foliage, growth, and general appearance."

It is to the enthusiastic lover of Nature that she reveals her secrets. His eye catches her slightest hints, his patience never tires with her seeming waywardness; from unexpected results he often learns his most valuable lessons. The beginner will find more encouragement if he selects pure species for his experiments. Our cultivated plants are largely the result of selection, cross-breeding or hybridization. or a combination of all three; hence the result of working with them is often a return towards primitive forms. Hand-pollination between species as they exist in nature will eventuate in due time in new forms; when this occurs, then with wise selection and careful isolation patiently carried out, satisfactory results will reward patient perseverance. Many of the forms will not be of any use; Mr. Groff's seedling gladioli of 1897 gave him 150,000 new varieties, and he expects some 200,000 more this year from the material now in hand. Not very many of these are likely ever to find a place in florists' catalogues.

Mr. Saunders, speaking of his new grain creations, says, "after selecting the most desirable type or types from a cross, all other forms are discarded,

and only those retained from year to year which are true to the types selected. After several seasons of careful selection the type usually becomes established and is then fairly permanent."

Arguing from the known sterility of the mule, it was supposed that all true hybrids were sterile. It is evident that in the vegetable kingdom we must either abandon such a position or introduce a new factor into our classification. Botanically, Juglans nigra and Californica are different species, so are Rubus Idæus and triflorus, Clematis crispa and C. coccinea, and so on; more than this, we say all the Raspberries belong to the genus Rubus and the Strawberries to the genus Fragaria, and yet plants have been raised by fertilizing the raspberry with pollen of the strawberry. Genera and species, after all, are but our inventions for convenience of classification; to which genus or species a given plant belongs depends upon the opinion of experts, and they are not all of one mind.

We learn from Mr. Burbank that when we change the condition of plants from that of a state of nature, give them plenty of room and of suitable food in the form most readily assimilated, proper light and heat, and add to these potent forces those of hand-pollination and judicious selection, great changes are sure to occur. Possibly in time the relative potency of these several forces may be ascertained, and certain lines of procedure laid down whereby definite results can be secured.

Here is a field for study open to the lovers of natural science. Will not Canadians contribute something to its solution? Hand-pollination is taught at the Ontario Agricultural College, perhaps thence shall come some who shall reveal to us these as yet unknown laws. Professor J. L. Budd, Iowa Agricultural College, tells us he has found that in the case of cross-bred apples, "hardiness follows largely the mother variety, and that the fruit is most frequently modified by the male parent.' Is this a universal law? Questions in abundance cluster around this matter of our control of the vegetable kingdom. These problems await solution. Mr. Burbank has given us no further light regarding them than the assurance that "there is no barrier to obtaining fruits of any size, form, or flavor desired; and none to producing plants or flowers of any form, color, or fragrance; all that is needed is a knowledge to guide our efforts in the right direction, untiring patience, and cultivated eyes to detect variations of value."

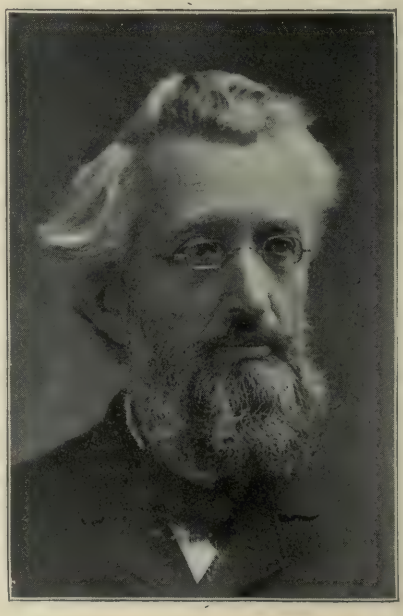

FIG. 1362.—DR. D. W. BEADLE.

MR. D. W. BEADLE, the writer of the foregoing article, is a well-known figure in Canadian Horticultural circles. Being a B.A. of Yale, and LL.B. of Harvard University, Mr. Beadle was well fitted to take the position of Secretary of the Ontario Fruit Growers' Association, to which he was elected in January,

1861. In 1878 the CANADIAN HORTICULTURIST was first issued as a magazine of 16 pages, under the editorial charge of Mr. Beadle; and was by him most ably conducted until the year 1887, when, upon his resignation, the present secretary-editor was elected to the position.

Thus for twenty-six years Mr. Beadle was Secretary of our Association, and his literary ability, coupled with his practical knowledge of nursery work in the raising of trees and plants, made him well fitted to be a leading spirit in horticultural circles.

ABOUT THINNING PEACHES.

FORTY cents per dozen was the price of some large, well-colored peaches we saw in a Toronto fruiterer's window, whilst a whole basket of small ones was offered for thirty cents, a striking object lesson on the advantage of securing size and quality in fruit. In years of abundant crops what a surplus of small peaches we see, and how few are the fancy specimens which alone those who have the money to pay fancy prices desire. Last year the crop of the Niagara Peninsula was enormous, yet a very small proportion of the baskets marketed were of such dessert fruit as the well-to-do citizen of Montreal, Ottawa, Hamilton or Toronto would consider an addition to that beauty and attractiveness of the table, which he is quite willing to pay for, and which in the case of floral decorations he actually gives very substantial proof of his readiness to pay for. The peach being the rightful monarch of all dessert fruits, and being by its native right, as it were, such a lovely, attractive-looking object, it would seem that size and perfection were more essential in its case than with any other fruit. Its possibilities being greater the buyer expects more of it. The canning factories moreover desire an article that will be able to compete with the Californian product, and dislike being obliged to put up a plethora of "pie fruit," which brings only poor prices and is as much trouble to put up as the best fruit. The practice of thinning has become part of the regular routine work of the Californian fruit farms, as the canning establishments will not accept peaches under a certain size in some cases 2½ inches being the required diameter.

If the trees form a large number of fruits the grower has it all his own way, and by bold yet judicious thinning, may have his matured specimens any size within reason he pleases. Boldness is usually required to lead him to sacrifice enough of the growing crop to make an appreciable difference, and it often seems reckless to throw away one-half or two thirds, or more, of what is on the tree. Judgment must also be used in the choice of the specimens to be retained or removed, and in performing the operation to obtain the best results for the future welfare of the tree. Among the principles that underlie the practice of thinning, and the conclusions readily deducible therefrom, the following may be briefly noted:

The forming of the pit is the chief drain on the vitality of the tree in fruit-bearing. It is therefore most essential that thinning be done early if the strength of the tree is to be reserved for maturing the fruit. Could we win the same triumphs with the peach as have been gained in the case of the California seedless Navel orange, or Sultana raisin, and have a crop without stones at all, the principle would have full play. But

as we cannot have this we must let the tree have as little ripening of pits as possible to do. In general it may be said that the peach may be thinned after attaining the size of a hickory-nut (by which time some idea can be formed of what each particular specimen is going to be like), till about the time the pit hardens.

Only if the operation is done early let the grower be careful to spray with Paris green, or the curculio may take all he has left. Some recommend a thinning at an earlier date "by cutting back the branches or shortening in," so as to reduce the number of blossoms, and this is also undoubtedly the best method to adopt in pruning. Yet, sometimes the skilled workmen of the farm cannot overtake this in the rush of spring work, but would be able to find time for thinning later on, or women, or other cheap labor could be employed to perform the latter operation. If trees are thinned early and leaf-curl comes on, they have all the more strength reserved to carry their burden despite their enfeeblement from that malady.

The power of carrying fruit differs with the variety and with the age of the individual. Soft, watery varieties such as Early Rivers, will load much heavier without injury to the tree than firmer varieties such as Wager. Trees only three years old should be allowed to carry only a very small crop. Hale, the great Southern grower, allows his three-year-old trees to carry about three-fifths of what he suffers his full-grown trees to bear. In Canada, probably a greater proportion even than this should be removed.

The individuals on a tree should be kept apart and not allowed to touch each other, and in wet seasons great loss from rot will thus be avoided. At Maplehurst, in 1897, two Alexander trees thinned just before a wet period, produced 8 and 11½ baskets of fruit respectively, while their companion trees equally loaded at time of thinning, gave only 4½ and 9½ baskets. When the fruits were crowded together on the trees not thinned, the rot spread, and entire clusters were destroyed, whereas on the thinned trees the individual peaches being isolated, did not rot so much. In general, 4 or 5 inches apart is the best distance, but as laborers usually will not thin so much as instructed, it is sometimes advisable to direct them to thin more freely. As the sap in the peach-tree tends most powerfully to the top of the tree and produces the finest fruit there, the fruit on the lower parts and the minor twigs should be thinned the most. When a twig or shoot has no leaves nearer its extremity than its fruit, such fruit is liable to drop, and is a suitable subject for removal.

The weight of a peach at the extremity of a branch is a greater strain on the strength of the tree than the weight of one at the base of the branch, and other things being equal should be discarded sooner.

All misshapen, wormy, mildewed and undersized specimens should, of course, be removed.

It is to be hoped that the practice of thinning will be more generally adopted, and that it will take its place with pruning and cultivating as part of the regular work of the farm.

A. E. MICKLE,
Maplehurst.

THINNING FRUIT.

SINCE our experience of 1897 in thinning peaches and apples, we are resolved to give it much more attention during the coming season. We must avoid producing poor fruit, and we must not allow our trees to carry a poor article to maturity, else we have the temptation before us of trying to dispose of it for money, when it should never be offered for sale.

We are pleased to note what our friend L. A. Goodman, of Missouri, says about it in the Rural World, as follows :

1st. No tree should have more fruit on it than it can hold up well and mature in perfection ; that is to say, that the trees should not be so loaded as to require their being propped, or so much that the branches bend very severely. This checks the growth of the fruit to such an extent as to injure the quality.

2nd. Every time a tree has too much fruit it weakens its vitality to such an extent as to require two or three years to recover, or so checks its growth that it begins to decline, and is permanently injured.

3rd. In the production of an over-crop it costs the tree more to ripen the seeds than to make the fruit.

4th. If from a tree heavily loaded there is taken one-half or even three-fourths of the fruit, there will be more bushels of fruit than there would be if it all were left on the trees.

5th. By this practice there will be less poor fruit put upon the market, and the good will bring better prices and give infinitely better satisfaction.

6th. Thinning makes the fruit of much better quality, makes it keep longer, and produces finer, handsomer, more attractive, and much more desirable and salable fruit.

7th When our orchardists shall look upon thinning as important as cultivation, pruning, care and attention, they will succeed in supplying our markets with perfect fruit, and of the very best quality, and thus increase the demand, enhance the value, and give vastly more satisfaction to both the producer and consumer.

COAL ASHES.

FORMERLY the dust from the sifting of our furnace ashes flew about and was a nuisance.

I procured a packing case at a shop, got a piece of wire cloth, made a three-inch deep, square sieve, put slits on side of box for it to run on, used an old broom handle for a shaker. With this rig, and the lid on case, ashes can be sifted easily and with almost entire absence of dust by giving them a few shakes and letting the dust settle before removing the lid.

A USE FOR THEM.

I have at last found a use for our sifted ashes.

As a stable absorbant and drier, sprinkle them on floor of stalls, the ammonia smell will at once disappear and the stable air be purified. As to their value beyond as an absorbent I know not, but they no doubt carry out with them a certain amount of valuable ingredients when so used.

I. SMALL.

Medalta, Port Hope.

IN GROWING SMALL FRUITS.

TEN years ago I began to raise small fruit. In the fall I prepared 12 rods of ground—manured it well. In the spring I bought first-class strawberry plants. These were set out 18 inches apart in the rows, the rows being 4 feet apart. To plant my ground it required 600 plants, which cost me $10. During the summer the ground was hoed and kept free from weeds. By fall the rows were nicely matted. When the ground froze in the fall the rows were covered with basswood sawdust, the coarsest of this was raked between the rows in the spring.

That season brought plenty of nice large berries. After the crop was harvested the vines were mowed and the thickly matted rows were narrowed to a foot in width by cultivating between them. Late in the fall the ground between the rows was again manured.

The following summer again brought forth a fine crop of berries. Not counting what was used in my family, I harvested that year $50 worth.

I began now to think that with more land it would pay to raise small fruit. I then bought 4 acres of sodded ground. With a jointer on my plow I worked ¼ acre up in good shape, set it, as at first, but using my own runners from plants which had grown their second crop. This was my first mistake, although I hadn't yet discovered it. I cultivated, weeded and covered with sawdust as before. The spring brought every appearance of a good crop. I began to figure: if 12 rods of ground will bring $50, 40 rods will bring ——. But when the crop began to ripen, there were quantities of scrubs not fit for market, and very few fine berries.

The 12 rods, now in its third year, bore a fine crop as before, though not so large. I kept no account of the amount sold that season, but began to try to discover the cause of the failure by reading and from talking with men of experience. I found I had made the mistake in using runners from plants having grown their second crop.

I then prepared ½ acre of ground. As my own plants were now run out, I bought 4,000 plants of different varieties, at a cost of $50. I had now learned my first lesson. After that I used the first year's runners, taking up all in the rows except the old plants, and the newest runners; these I plow under, as they are too weak to give the best results.

I do not use barnyard manure now on my strawberry ground, because it brings so large a crop of weeds. Now, after harvesting two crops of berries, I plow the vines under, and the last of August or the first of September I sow the ground to rye. The following spring when the rye is up about three feet, I plow it under, roll the ground well and set out to plants.

In the spring I sow it well with unleached ashes, using about 50 bushels to the acre, the same as plaster would be used. This saves much labor in hoeing and weeding and also keeps the ground in good shape.

I have been very successful in always having nice large berries. I have only given my experience with strawberries. Aside from these I set out the balance of my 4 acres to asparagus, currants, gooseberries, raspberries and blackberries. The blackberries I consider the most profitable.

This year from ⅛ of an acre, of mostly

the Minnewaski variety, a large round berry, I sold 500 quarts at an average of 7 cents per quart. Being unable to buy more land, I leased 20 acres, which are also set out mostly to small fruit, including 300 peach trees and 150 grape vines. These have not yet borne much fruit, but look well.

J. D. McCRIMMON.

St. Louis, Mich.

BARREL STRAWBERRY CULTURE.

OUR recent reference to this subject has attracted so much attention and made so much correspondence that we again refer to the matter and present the following working details which are reproduced from a circular of J. P. Ohmer, Dayton, Ohio, who is a successful cultivator by this method.

"Take any iron-bound barrel, except one which has been used for pickles, sauerkraut or vinegar; remove all hoops but four, and bore four holes in the bottom. Then space holes around the barrel so that twelve plants will go around it; five rows high will make sixty plants to the barrel, (the fifth row can be placed five inches from top of barrel). So as to make the holes of proper depth, bore two holes, one above the other, using a bit one and one-half inches, and cut out the wood between the two holes, you will then have a hole one and one-half by three inches. Put about two inches of firm gravel or coarse sand in the bottom of the barrel. When planting put the plants as near the top of the holes as possible, to allow for settling of the soil. Use clay, well mixed with rotted manure; put in till about three inches above the first row of holes, being careful not to have it too wet.

"The first row of holes must be eight inches from the bottom of the barrel. Get in and tramp the soil solid, then loosen with a trowel where the plants go and plant that row. Spread the roots out well, then put soil about one-half way up to the next row of holes. Now take a common drain tile, twelve inches long by three or four inches in diameter, put it in the centre of the barrel, and fill the tile with coarse sand, then fill up the barrel with soil a little above the next row of holes and tramp again. Be careful not to move the tile and when adding soil to the barrel, cover up the tile, so as not to get any dirt in it. After planting the second row, lift the tile, see that the sand settles and fill the tile with sand again. Then put in soil above the next row of holes, tramp again, and plant that row; and repeat operation until the five rows are planted. But don't fail to tramp.

"After planting, the tile remains in the barrel; have it empty so as to take the water. In watering you water in the tile for the lower rows; on top of the barrel for the two top rows. It would be impossible to water the lower plants without the tile and the core of sand. You can water the plants too much. Fill the tile once per day, and put about two quarts of water on the outside of the tile. After cold weather sets in we quit watering. The plants want no winter protection. Set the barrel on brick, to keep it off the ground. If any should die in the summer, you can replant by taking a runner and putting the young plant in the hole, making it fast with two little sticks.

"Use the largest fruiting variety that does well in your locality, and a perfect blooming sort, if possible. Planted early in the spring, a fair crop may be expected the same season."—American Gardening.

THE KIEFFER AND LE CONTE PEARS.

THE Kieffer and Le Conte pears were introduced many years ago, and at first found favor. In California they were soon discarded, the Kieffer especially being treated to columns of sarcasm anent its pumpkin-like flavor. Those, however, like many in the southern and southwestern states who have persevered, have discovered great value even in the Kieffer when it is properly harvested. This variety is a cross between the Bartlett and the Sand pear of Asia, the Le Conte also being a hybrid with Oriental blood, and both show it plainly in habit of growth. It is necessary that the Kieffer be laid away in a store room until it gets its color, and not till then should it be put on the market. Both varieties are vigorous growers, with large, shining leaves, and both are good and regular bearers. The Le Conte is particularly a success in the southern states, and its cultivation has assumed large proportions commercially. These pears seem almost exempt from disease, which is not the least recommendation. Planted even as a stock on which to subsequently graft other varieties, they are valuable, and as such they should be on their own roots (raised from cuttings), or on their own seedlings. The Asiatic pears make admirable stocks, and will no doubt supersede all others.

FIG. 1363.—KIEFFER PEAR.

PEAR BLIGHT.

Look over your pear trees and cut out all limbs that show blight — and mind this to cut 15 to 20 inches in the sound wood below the dead bark. Be careful about this. If you only just cut out the dead wood, before the summer is half gone you will find your trees just about in as bad fix as if you had not cut any. Have a heap of courage and a sharp saw and you may save valuable trees to bear crops of fruit for a number of years. I know what I am writing about, for I have been all along this line for over twenty years. Now, I will say this: The Bartlett is a variety that will blight, and still live and bear fruit, maybe for some years, but it is the only one that I know of, and it will help the Bartlett to cut the blight out. I am satisfied that we have as yet no such a thing as blight proof pear trees, and all who offer such for sale should be regarded as frauds or fools. — Rural World.

SOUR CHERRIES IN WESTERN NEW YORK.

THE growing of sour cherries in Western New York is largely confined to two varieties, the Montmorency and English Morello, and it is not yet fully determined which of the two is the more profitable in the long run. The preference has generally been given to the English Morello, as it bears younger than the other, and its dark colored and very acid flesh have made it popular with the canning factories. Just now, however, the canners are calling for the Montmorency in preference, for, whilst not so sour as the other in the natural state, it "cooks sour," and the Morello is apt to develope a bitterish or acid taste in the cans. The Morello is also much subject to leaf-blight, while the Montmorency is almost free from it; and the Montmorency is a stronger and more upright grower. The present drift is decidedly towards the Montmorency. The two varieties complement each other, however, for the Montmorency is about gone by the time the other is fit to pick.

This Montmorency of Western New York is a very light red, long-stemmed cherry, broad, and flattened on the ends, the flesh nearly colorless and only moderately sour. The tree is an upright vase-like grower.

Amongst the Griottes, or red-juiced cherries, three have gained some notoriety in Western New York,—the Ostheim, Louis Phillippe, and Morello.

The Ostheim is a very productive variety, ripening about a week after early Richmond, but it is too small and too early to be valuable for general cultivation here.

The Morello variously known as English, Large Dutch and Ronald's Morello, is nearly two weeks later than Montmorency, a bushy and finally a drooping grower, with medium-sized, roundish or round-cordate fruits which become red-black when fully ripe. Flesh very dark, much sourer than the Montmorency. In Western New York the Morello harvest begins from the 8th to the middle of July.—Cornell Bulletin

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THE DYEHOUSE CHERRY AND THE EARLY RICHMOND.

THE difference in the fruit of the two varieties is not a great deal until both are ripe, though Dyehouse generally ripens a week or ten days in advance of Early Richmond But the fully ripe fruit of Dyehouse is superior to the fully ripe fruit of Early Richmond. Another difference, as noted by Prof. Powell, of the Delaware Station (Bulletin No. 35), is in the juice of Dyehouse being somewhat dark colored while that of Early Richmond is colorless.

Both varieties are profuse bearers, and Dyehouse is probably the earliest bearer of all fruit trees, young trees, two years old, quite frequently bearing in the nursery rows. Both varieties are valuable for localities in which the sweet cherries are not generally successful; and Dyehouse is valuable for any locality and in any collection, considering its excellence for pies, for canning, and, when fully ripe, for eating right from the tree. It has also the smallest pit of all cherries.

Dyehouse, as many of our readers know, originated in Central Kentucky, an accidental seedling in the orchard of the person whose name it bears. This was years ago, when the people there had heard little or nothing about budding or grafting, and increased the stock of their favorite and never-failing cherry by sprouts dug up from the roots of the parent tree. And some prefer these sprouts still, though the reason of their preference is hardly clear. Finally, after thirty years of continuous bearing—every year with one exception, when a late frost destroyed the young fruit, then about the size of peas—Mr. Henry T. Harris, a person who had experience with choice fruits, came across it and introduced it to the public.

Since that time—over twenty years ago—it has demonstrated its excellence in various parts of the country, North as well as South, East and West, even in Minnesota and Canada.

There is one peculiarity attending the propagation of the trees of Dyehouse; the buds frequently do not succeed, failing to become attached to the stock, and consequently dying. Why this is so, is difficult to say, but it affects only the nurseryman.

PLUM NOTES.

GRAFTING.—Plums should be grafted very early to obtain best results, whatever the stock they are set upon. Care should be used not to tear the bark, if the cleft style should be used, but incline the blade that does the splitting to the side of the stump that is to receive the scion. This will cut a smoother place to set the scion than would be made by not doing so, and the fit will be better. Plum scions should be cut very early. Fall is really the best time to cut scions of all kinds; for there is no possibility of damage from cold weather, or of the buds starting from the warmth of approaching spring.

BURBANK.—As a class, the Japanese plums are inferior in quality to the domestica types; and yet, the Burbank and some others are fully as good as the Lombard if, in fact, not better. The particular merits of the Japanese plums to my mind, are their earliness, great productiveness, early bearing, beauty, long-keeping qualities. They supply varieties in summer before any of the valuable domestica types ripen their fruit. They are so exceedingly productive as a class that they tend to overbear, and it is probable that we shall find complaints of the trees being short-lived. The best quality of the plum is ordinarily not developed except by heroic thinning. Trees which bear so heavily as these Japanese plums should receive extra care in thinning, tillage and fertilizing.

PRUNING.—My method of pruning plums can be told in a few words: To cut back two-thirds all new wood; that is, all the new leading shoots are cut back at least two-thirds of the entire length. This is my rule, and I follow it as closely as circumstances will permit. —AMERICAN GARDENING.

GROWING POTATOES—PREVENTING DISEASE.

(*Continued from last month.*)

The scab is a fungus growth on the skin of the potato making it unsightly for market and causing considerable waste in cleaning for the table.

To kill the scab we first wash the seed so that the fungi side reaches every part of the skin.

Make the solution with one ounce of corrosive sublimate dissolved in one gallon of hot water, added to seven gallons of water, or in this proportion for any quantity required. We use the sheep dipping tank, but two barrels, or an oil barrel sawn in two is handy.

Leave the potatoes in the solution ninety minutes, draw off the solution in the other barrel or any wooden vessel, or dip out the potatoes when they are ready to cut and plant and will not produce a scabby crop except they are handled in crates or bags that have had scabby potatoes in them, or planted on land that has produced a crop of scabby potatoes.

There has been a popular opinion that fresh stable manure caused the scab. We staked out a plot and applied fresh manure directly on the seed after dropped, but the crop from all parts of the field was smooth and clean including this plot.

This takes a little additional time and expense, but we have found it to pay us well from ready sales at top prices.

Blight.—Early in August, 1895, we noticed the under and older leaves on our potatoes showing brown patches on them which was then spreading rapidly.

Although too late to get best results we undertook to spray with Bordeaux mixture the middle and end of August, with only crude implements at our disposal, with the result of an increased yield of 36 bushels to the acre from the sprayed over the unsprayed parts of the field.

1896 found us prepared to do first-class spraying at short notice, and again the blight commenced the last days of July, and we made three sprayings with Bordeaux the first, middle and end of August. At the time of the last spraying we found the unsprayed rows completely dead with the blight, and the sprayed rows were beautifully green yet and remained so up to the time of frost, late in September, and yielded 87½ bushels to the acre more than the unsprayed.

The same variety (Empire State) was used for the test, all planted the same day under the same conditions, and care as far as possible except the spraying.

At the Cornell University Agricultural Experimental Station in 1897, the potato plots cultivated on the level yielded 325 bushels per acre against 288 bushels from plots hilled up, showing an increased yield in favor of the level cultivation of 37 bushels per acre with Carman No. 3.

At the same station the R. N. T. No. 2, unsprayed with five cultivations yielded 234 bushels.

Sprayed four times with five cultivations yielded 305 bushels.

Sprayed four times with seven cultivations yielded 347 bushels.

Showing an increased yield of 71 bushels per acre from spraying for blight, and an increased yield of 113 bushels per acre as the result of spraying and two extra cultivations.

Varieties.—The best varieties ever introduced have lost in vitality in a few years, which makes it necessary to orig-

inate new varieties. This work is very interesting and might be taken up by our young people.

Care should be taken to gather seed balls from the best varieties. Wash out the seeds in the same way that tomato seeds are washed and dried. Plant in box in window, hotbed, or greenhouse early in spring and transplant in berry box or flower pots before the plants begin to spindle up, and transplant in open ground soon as danger of frost is over, giving same care as for field crop.

Seedlings the first year will be of different sizes, shapes and colors and perhaps quite different in type from the parent stock. Select only the fittest the second and third seasons, and in this way we may originate new varieties equal if not superior to any in cultivation.

Our first seedling was the Rot Proof (which has not proved to be free from rot in all sections but at home has never shown any development of the putrid rot caused by the late blight), which yielded in 1897 at Agassiz, B. C, 454.40 bushels, and an average at all the stations of 308 11 ; at home it yielded 309.15 as compared with 265.30 White Star, and 206 bushels of Beauty of Hebron per acre.

The yield and shape is quite satisfactory, but the dark red skin is against its appearance in the market.

A number of seedlings are being tested.

The Peerless, R. N. Y., Empire State, Vick's Perfection, Great Divide and others have been tried for market and give good yields, but customers will not buy them if they can get potatoes of better quality.

The Hebron, Elephant, Potatuck, Early Northern, Freeman and Pearl of Savoy are of good quality, but will soon need replacing with new blood.

Spraying.—Our outfit consists of a spramotor No. 2 with eight feet of hose connecting the pump to the centre of a nine feet piece of gas pipe with four nozzles arranged in it three feet apart, with which we can spray four rows of potatoes fast as a horse will walk.

The barrel, pump and all are mounted on a cart made of two rake wheels 6 feet apart. When the horse is walking between two rows, the wheels are running between the next two on either side.

Two men with this rig will mix and apply a 50 gallon barrel of Bordeaux or Paris Green solution in 45 minutes, if the water is not more than 40 rods from the field to be sprayed.

At ten cents an hour the expense of applying a barrel is 15 cents.

One 50 gallon barrel is sufficient to spray an acre of potatoes once except that the vines are very heavy.

Four ounces of Paris green to the barrel of water is sufficient to destroy the young Colorado beetles ; if they get nearly full fledged double this amount will be required—

Costing from 19 to 23 cents per barrel, including material and time of spraying.

For Bordeaux we use 6 pounds Copper Sulphate, 4 pounds fresh lime, costing 47 cents per barrel applied.

The Flea beetles are very troublesome some seasons, doing considerable damage to the young plants, enfeebling their growth and making them an easy prey to disease. Neither Paris green nor Bordeaux kills this pest but the latter seems to be very offensive to them and they hunt new feeding grounds.

Conclusions. — The early and late blights can be prevented by a timely use of Bordeaux mixture.

Every acre of potatoes we sprayed during 1896 and 7 gave us enough pro-

fit over unsprayed to pay for a first class outfit to spray with.

Spraying both years gave satisfactory yield of good quality.

Unsprayed rows were immature and of poor quality, similar to those found in many parts of New York State, Ontario, Ireland and other countries.

ALF. BROWN.

Picton.

THE HOUSE FLY.

I THINK now is the time of year when the old saying, "an ounce of prevention is worth a pound of cure," is very applicable, for whilst one cannot entirely rid oneself of those worrying pest flies, one can do quite a lot to decrease their numbers. So a few words as to how, when and where they breed, and how they may be destroyed, will, I hope, be useful to many people to whom the incessant buzz and worrying bite of the fly helps to make summer heat unbearable. The house fly (Musca Domestica) belongs to the family (Muscidæ) in the order Diptera, and it is marvellous to find how numerous are their progeny, and how rapid their increase, amounting to 2 080,320 from one fly in one season. We naturally ask ourselves where and when do they breed. They breed chiefly in horse manure during the summer, also in refuse and ash heaps. Have you never noticed when turning over manure in the summer, the numerous small brown grains like grains of rice, they are the pupæ. The eggs hatch after being laid, in 24 to 30 hours, becoming a perfect insect in from 7 to 9 days. It is ready now to lay eggs, which in turn hatch, and this is the source of so great a number. But now how to destroy them;—cast all refuse, manure and decaying matter far from the house and barn, or if that cannot be done, turn the manure over to allow the hens to scratch and devour the eggs, which they eat with rapidity. And I cannot be too emphatic in pressing upon every one to move the manure, for in it lies the greatest breeding ground of the house fly. Nature has given us certainly some help in afflicting the fly with a fungus disease called "Sporendonema Muscæ," (a spray pump isn't in it), spreading through the entire body, covering it with a powdery fluff, saping its life until it finally succumbs, generally bursting from swelling.

NIGEL KEEP.

Grimsby.

HOW TO MEASURE CORN IN A CRIB, HAY IN A MOW, ETC.—This rule will apply to a crib of any size or kind. Two cubic feet of good, sound dry corn in the ear will make a bushel of shelled corn. To get, then, the quantity of shelled corn in a crib of corn in the ear, measure the length, breadth and height of the crib, inside of the rail; multiply the length by the breadth and the product by the height, then divide the product by two, and you have the number of bushels of shelled corn in the crib.

To find the number of bushels of apples, potatoes, etc., in a bin, multiply the length, breadth and thickness together, and this product by 8, and point off one figure in the product for decimals.

To find the amount of hay in a mow, allow 512 cubic feet for a ton, and it will come out very generally correct.

SPRAYING PEACH TREES FOR PEACH CURL.

SELDOM if ever have we observed a more serious attack of peach curl, than that now (May 24) affecting the peach orchards of Southern Ontario. For several years past this fungus has been growing more and more troublesome, often causing the fruit to drop, and seriously affecting the health of the tree. The cause was long a mystery, but it has been recently proved to be one of the fungi called Exoasceæ, and this particular one E. deformans. It affects both the leaves and the young twigs, causing abnormal growth and development of the affected surface, and consequently a complexity of that surface; frequently the affected leaves drop from the tree, as well as the fruit. The trouble is progressive, when once in an orchard; because the mycelium or growing portion of the fungus; leaves through the winter in the interior of the leaf buds, and only waits for the developing leaf of the following spring to grow out with it, and produce spores for its rapid spread, on both the under and upper surfaces of the leaf.

FIG. 1364.—*Exoascus deformans*, The Peach leaf Curl, from Cornell Bulletin 73.

A year ago we drew attention to the fungus, saying we hoped Bordeaux mixture would prove useful, but at that time we had no proof that it would; but this spring we have some decided evidence in that direction. Mr. W. M.

FIG. 1365.—Leaf Curl, filaments magnified.

Orr, provincial inspector of spraying, has been faithfully spraying his peach trees since the first opening of the leaf, with Bordeaux mixture.

On the 24th of May the writer visited the orchard for the purpose of noting the result, and found that while orchards on each side of his were affected to an alarming extent with curl leaf, Mr. Orr's were almost free. We further noticed that certain rows had been whitewashed by means of a spray pump in the winter season, the whole tree being thoroughly whitened. The object of this was in part to test the effect in delaying the opening of the buds until danger of frosts was over; but it seemed to have a special effect also upon the fungus under consideration, for on those rows the foliage was still less affected.

EXPERIMENTAL SPRAYING of apple trees is being again pushed forward most vigorously by Mr. W. M. Orr, the Provincial Director. The province is divided into three divisions, the Central, Eastern and Western, and ten points in each are selected for the experimental work. The apple trees in each are selected in some orchard where a good assortment of varieties can be found, and these are treated with six different applications of the Bordeaux mixture. The results in some cases have been simply surprising, the trees being not only free from scab and codling moth, but also from canker worm, bud moth, tent-caterpillar and many other insects. No doubt Mr. Orr's next report will be of still greater interest than his last one.

THE SEASON AT ITHACA.

The season here, in common with most other parts of the Eastern United States and I suppose Western Canada, has been abnormal in many respects. At first—about the middle of March—it gave promise of unusual earliness. The peach buds swelled, here and there and apricot showed its blossoms, but the cold weather of April retarded vegetation wonderfully and was the means of saving the crop in many parts of the State from the damaging effects of some late April frosts. The prospects are at the present time most favorable for an abundant crop of all kinds of fruit Peaches will be rather light in some places, but the crop generally bids fair to be above the average. Curl leaf has, however, made its appearance and may lessen the prospective yield. Dwarf pears and Japan plums have set very fully in the Experiment Station grounds. The blossoming period of fruits and ornamental shrubs was wonderfully prolonged by the cold weather of April. For instance, Forsythea began blossoming March 28th, was in full bloom on April 10th, and only lost its last flowers about a week ago; just now quinces are in full bloom and very striking with their beautiful white terminal tips.

A careful study is being made this year of the phonemna attending the pollination of orchard fruits. This field appears to grow wider the farther it is explored and important results are expected to follow the investigations of this season. Insects are abundant, tent caterpillar everywhere and aphides already beginning a vigorous campaign on the snowball. Apropos of this I may say that Mr. Slingerland is following his interesting bulletin on the codling moth with another equally interesting, describing insects injurious to the quince, I am glad to learn that it seems probable Mr. Slingerland will succeed the late Dr. Lintner, as State Entomologist. Such an appointment would certainly meet with the hearty approval of nurserymen and fruit growers. As an economic entomologist Mr. Slingerland stands in the first rank of workers in this branch.

I may say in closing this hasty note that the HORTICULTURIST is much appreciated by the members of the University Horticultural Club.

JOHN CRAIG.

Cornell University, May 23,' 98.

THE DAHLIA AS A SHOW FLOWER.

FIG. 1366.—A WHITE CACTUS DAHLIA.

MR. FRANK BRUNTON, of Boston, Mass, writes us an excellent paper on the above subject. We much regret that space will not permit of the whole appearing in this month's issue, and we have therefore selected from that portion most adapted for the present month. The balance which gives the history of the dahlia, and a description of varieties, is reserved for a future number.

"The great improvement which has

taken place in the show and fancy dahlia in the last 25 years is in the outline, well shaped petal and perfect centre, the flowers of the present day requiring little or no dressing in comparison to the time it took 30 years since to prepare a stand of dahlias for exhibition.

Improvement in Habit.—The improvement in the flower has also had some effect on the habit, and the show varieties of the present day are not nearly so tall in habit as those grown 25 years since.

Potting.—I might say a few words as to the preparation of the plant to produce show flowers, although the subject has been described in another paper under the heading of cultivation The plants intended to plant out to produce show flowers, should be potted from the small five inch pots (in the early part of May) into 4 inch, and placed in a cold frame until planted out early in June.

Nearly all the varieties make strong plants, and succeed well if grown from cutting, but a few varieties such as Bendigo, Mrs. Foster, Burgundy, Herbert Turner, etc, which are very double, or are apt to come with green centres, are better grown from pot roots, or old divided ground roots.

Planting. — The plants should be planted five feet apart; if in a border, arranging for the tallest flowerst at the back. After the ground has been squared out, dig holes about two feet square and the same depth into each hole put a spadeful of light potting shed or other soil mixed with a little manure—this is to give the plant a start—break up the soil taken out of the hole before returning it, and after the plant is planted lightly tread when replacing it A light stick will hold the plant for a few days, and when planting is finished put a stout stake four to five feet high to each plant, and tie the stem of the plant to the stake rather loosely to allow for the stem to swell in due course. As soon as the main stem throws out laterals, add four smaller stakes to secure the side branches, to keep them well tied so that plenty of light and air are admitted to the plants during growth.

Disbudding and Thinning.—There is no general rule to disbudding. Every variety has to be studied in this respect; to commence to disbud some coarse growing varieties, such as Champion Rollo, Royal Queen, etc., as soon as the buds appear would make the flowers coarse the whole season, whilst all varieties should be sparingly disbudded at first, by taking only one bud away, and then within three weeks of the exhibition the grower can choose the bud which is perfect, and will be likely to be in flower about the date of the exhibition, and remove all the other buds. Should the variety be a thin and small flower, then remove all the side shoots down from the bud to the stem; but should the variety be inclined to become coarse, only thin sparingly until a week or so before the show.

Watering.—This is most essential to show a dahlia, the plant should never be allowed to be dry at the root from the time of the planting, and I think I might here state that after the plants have been staked and tied out, the surface of the soil should be forked over, and the plants top dressed with a good dressing of stable manure; this will keep the roots moist, and encourage the roots to the surface to feed. Should the weather be hot and dry the plants should be sprinkled over head every night in addition to the watering at the roots which at first should not be excessive, but sufficient to keep them moist and growing. Heavy watering should be commenced three weeks before the exhibition, as the plants will be suffi-

ciently large to take plenty of water, and should be continued until a week previous to the show, the last week lightly sprinkling round the plants to keep them fresh and moist, too much water a few days previous to the show has a tendency to cause the flowers to shoot their petals after being cut for the exhibition.

Protecting the Buds and Blooms.—To protect the bud from earwigs, caterpillars, green fly, thrips, etc., a muslin bag six inches by eight inches is best, and should be placed over the bud as soon as it shows color, the bag should be fastened with bast or raffia round the stem of the flower, and should be taken off every morning to see if any insect has by chance got into the bag, and the flower examined to see if it is growing properly, and as the flower progresses the bag should be lifted up every morning, so as not to check the growth of the flower.

Shading.—Shades are best made of a stout wire frame with a thick canvas covering, and should the weather prove very hot a few leaves of rhubarb should be laid on the shade over the full-grown flowers Shading should be commenced a week previous to the exhibition. Some tipped or light edged flowers are much improved by a flower pot (24) placed over them on a table a week or ten days before the show, with a piece of glass over the hole in case of rain.

Exhibiting—The stands on which the flowers are exhibited are usually painted green, and are made of one uniform width, viz., 18 inches, and should be supported by legs 9 inches at the back and 3 in front, holes being made to receive the flowers 6 inches apart, and for a stand of 12 flowers 24 inches long.

Selecting Blooms for Exhibition.—In selecting blooms for exhibition, place deep circular flowers at the corners of the stand, and introduce as much diversity of colour as possible, and select quality before size, a large coarse flower often spoiling what would otherwise have been a good stand

Qualities in a Good Flower.—The perfection in a show flower should be fair size, globular with good depth, the petals short and cupped smooth on the edge, the outline a perfect globe, the centre high but not above the face of the flower; the centre should be close, and the petals radiating from the centre should expand by degrees. Types of the most perfect flowers being Mrs. Gladstone, Bendigo, Joseph Green, and Sunbeam, etc.

Color.—The color of a self should be bright and clear, of one uniform shade from the centre to the back petals; if an edged flower, the marking should extend round the edge of each petal until it is lost out of sight.

THE Sweet William, though an old-fashioned flower, is still one of the best free flowering plants, and when fully out it is a blaze of bloom. Some do not like it as a cut flower, but when associated with others of a more graceful nature they are useful. There are many dirty colors among them, especially among the mixed ones, and it is best to get each color separate. The best are the dark crimson, double white and the auricula-eyed. They should be sown now, and should be planted out in a prepared bed where no water will stand in winter. In early spring they should be planted where they are to flower. They are quite hardy with light protection. The best covering is one of evergreen branches.—Gardening.

FIG. 1367.—IMPORTANT AND PROPER CONDITION OF STEM FOR CUTTINGS.

GREENHOUSE plants are generally multiplied by what is known as soft cuttings of the stems. They are usually made from terminal shoots, although if cuttings lower down the stem can be obtained in the proper condition, they will readily root and make good plants.

The plants from which cuttings are taken should be strong and vigorous; if stunted by insects or by improper surroundings of heat, light, temperature or food, or weakened by excessive production of flowers, the result will be quite unsatisfactory, and it will be equally so if soft, watery growth, produced by a high temperature and excess of nitrogenous food is used. The use of cuttings from plants enfeebled by disease will be even more disastrous, as the plants produced will not only be susceptible to the attack of the same and other diseases, but they may even have the germs of the disease within them when severed from the parent plant.

FIG. 1368.—SOFT CUTTING OF COLEUS.

While a soft, watery growth is not desirable, cuttings cannot, as a rule, be induced to root readily after they become woody, and the usual test is to reject all cuttings that when bent do not snap off, rather than crush down without breaking, the latter behavior indicating that the fibro-vascular bundles (woody fibers) have formed (Fig. 1367). Cuttings made from stems in that condition root slowly and sparingly, and the plants will be weaker than when made from those in the proper condition. For a few plants like the rose, a firmer condition of the wood is desirable.

Soft cuttings should have a bud at the top and from one to three inches of stem. Unless a cutting can be made three inches long and have its base in proper condition, it will be better to shorten it to one inch, and, if necessary, the length may be even less, its stem being principally of value to give a secure hold in the cutting bed. Cuttings of this kind should have at least one leaf, and sometimes from two to four are left. Those at the lower part of the stem should be removed, and the others shortened in (Fig. 1368). In this way the amount of evaporation will be checked and the cuttings can be placed nearer together. Cuttings should be so handled that they will not wilt. It is well to use a sharp knife, and to cut off the stem at nearly right angles. Neither however, is really necessary, and in

FIG. 1369.—GERANIUM CUTTING.

many cases the cuttings can be broken off without the use of a knife. If in the proper condition, most cuttings will root readily from any part of the stem, but with others that root with difficulty, and especially if they have become too hard, it will be well to have a bud near the base of the cuttings, as roots are most readily sent out from near the nodes.

There are, however, a few plants that, owing to some peculiarity of construction or growth, need different treatment, and among them are our common pelargoniums (geraniums) (Fig. 1369) and many of the cacti and other succulent plants. These are more or less succulent and if placed at once in a cutting bed are likely to rot off. After being made, it is well to spread them out and allow them to wilt for from one day to one week and then place them in a rather dry cutting bed, or they may at once be potted off, using a soil containing at least one-half sand. If, after giving them one thorough watering, water is with-held until they begin to wilt, cuttings handled in this way will often show smaller losses than when grown in a cutting bed. Many plants do not strike readily unless in a moist, warm air and for such a hand glass or propagating case must be used.

A method of rooting cuttings that gives excellent results, when bottom heat cannot be secured, is placing them in earthenware pans of sand two or three inches deep which are kept constantly saturated with water. The other treatment, such as the making and setting of the cutting, watering and ventilating, is exactly the same as for the cutting bed. Some of our common plants like the oleander root even better if placed in clear water than when in a cutting bed, or the saucer with its mud.

Any kind of glazed earthenware vessel, of a suitable size and depth, may be used, but if it is unglazed the water will need to be much more frequently added. —L. R. TAFT, in American Agriculturist.

COREOPSIS *lanceolata* and *C. grandiflora* are still (July) giving us plenty of their lovely yellow flowers. For cutting this is one of the finest June flowering perennials we have, and how free they do flower! They don't last a great while, but then they give us a few flowers in the early fall months, which makes up for it. They are easily raised from seed, but they don't seem to be very hardy the first year, as we lost last winter the most of ours that were raised from seed the summer before, while the old plants in the garden came out all right.—Gardening.

SAID the golden-rod as it looked through the fence into a cornfield: "Dear me, what big ears you have!" The corn was too shocked to say anything in reply.

EPYPHYLLUM GÆRTNERI.

FIG. 1370—

SIR,—By this mail I am sending you a photo. of a Cactus in bloom. You may remember this as one of the plants I showed at the meeting of the Ontario Fruit Growers' Association in Waterloo, last December, as a specimen of a grafted Cactus. When photographed, there were thirty-five flowers open, some of these have been open daily for three weeks, thus proving that Cactus flowers are not all ephemeral.

This plant, *Epyphyllum Ruselliánum Gœrtneri*, is one of the most handsome and free-flowering of all the Epyphyllums, and those who have not seen or cultivated this most beautiful hybrid, have a grand treat in store. The flowers are not like the other varieties of the "Crab Cactus," resembling more a flower of Phyllocactus, and differing also in color, which is brilliant scarlet. They are profuse winter bloomers, easy to grow, and when grafted on the Pereskia or Cereus, soon make fine specimens, and a grand display can be had from November to May, at a very small cost.

Cuttings strike readily at any time of the year, in a warm house, after having lain in the sun for a few days, so that the cut is calloused; insert in a clean pot of sandy soil and give a slight syringing with tepid water occasionally. Grafted plants are more graceful and produce flowers in greater profusion.

JAMES LOCKIE.

Waterloo.

AZALEA.

THE plants of Azalea Indica which make such a show during winter and spring are, for the most part, grown in Europe, especially Holland and Belgium. They are grown in nursery beds, dug up, and shipped here in the fall. When these semi-dormant plants are received, the florists here pot them at once in a compost consisting of two-thirds loam and one-third leaf-mold. They must be potted very firmly, the soil being rammed down at the side of the pot with a flat stick. As they have a very hard ball of roots, and are extremely dry when received, it is well to stand the plant in a tub of water for a few minutes before potting it; otherwise the ball is so much harder and drier than the soil added when potting, that subsequent waterings run right through the soil, without really reaching the roots. There is no doubt that neglect of this precaution is often the cause of trouble with Azaleas. When first

potted, or when taken in in the fall, Azaleas should be started in a cool greenhouse temperature, ranging from 40 to 45 degrees at night. As the season advances, a higher temperature may be given, if it is desired to hurry blooming; but they make the best growth in a temperature of 45 to 55 at night, and the flowers last longer than when warmer. When they are making buds, remove the little weak leaf-shoots that may appear around the flowers; you do not want them to make a lot of new growth until the flowering is over. Water liberally, yet do not allow the soil to become sodden. In an overhot, dry place they are likely to suffer from thrips, and greenfly is another enemy; fumigation with tobacco may be used for both insects. Hard syringing directed to the under side of the leaves will also dislodge thrips. Fumigation should not be used when the plants are in full bloom, as the smoke is likely to injure the flowers. As the flowers fall, the seed-vessels should be plucked off, and the plants continued in the same temperature while they make growth. They may be syringed freely during this. When settled warm weather begins, say in June, the Azaleas may be set outside to ripen their wood, remaining out until there is a hint of frost in the fall. A slightly shaded place facing the north, where they will be free from drip, will suit them. It is a good plan to stand the pots on boards, so that there is less risk of worms entering them, and bank up to the rim of the pot with coal ashes or tan bark, so that the soil does not dry out so rapidly. The plants must be watered and syringed while in this position, and by the time they are brought in, their wood is well ripened, and upon this depends the extent of their bloom.—R. N. Y.

RUDBECKIA, "GOLDEN GLOW."

AS a lover of the beautiful in the flowery kingdom I want to pay an humble tribute to a recent garden debutante, Rudbeckia "Golden Glow." In the spring of 1896 I set out three plants that were about twelve inches high. In the month of August they had grown to a height of six feet, had branched out beautifully, and they were laden with their amber-like blooms for about a month. They survived last winter with slight protection, and this summer each plant grew into a magnificent bush, laden with exquisite fluffy yellow blooms, that were ready to challenge the beauty and grace of the proudest chrysanthemum.

Its period of bloom lasts for more than a month, and when at its height it looks like a majestic bouquet of golden chrysanthemums. The flowers are so large, and in so great profusion, that there is scarcely any part of the plant visible except the slender, willow-like leaves. The huge bouquets that are daily plucked from its wealth of bloom will last a week in a vase supplied with fresh water each day. I would advise all lovers of the beautiful to try a plant this spring.—Vick's Magazine.

WINDOW-BOXES FOR FLOWERS.

IN the city, where it is impossible to have a garden, there may still be quite a substitute for it in the form of a window-box, and this substitute may be enjoyed by the occupants of upper stories as well as by those living on the ground floor. A window-box that will grow plants quite as well as the elaborate and expensive boxes used by wealthy people, will cost very little. The box should be as long as the window is wide, or a little longer, and about a foot

FIG. 1371.—A PRETTY WINDOW.

wide and a foot deep. Fasten it level with the window sill, or just below it. For support use iron brackets, which can be screwed to the wall just below the box, or by braces of wood running from the outside of the bottom of the box to the wall, set at such an angle that ample support will be provided. A few nails can be put through the box into the sill or side of the house, to give additional security and firmness. Any boy ten years old can put the box in place, if you furnish him with a saw, a hammer and some nails to work with. Packing boxes of about the right size and shape can be bought at many of the dry-goods stores for a small sum.

When in place, fill it with the best soil you can get—the richer the better; but if you cannot get such soil, use whatever is at hand and depend on soap-suds and the like for food for the plants. The best annuals for use in window-boxes are: For flowers—petunias, phlox, calliopsis, sweet alyssum and nasturtiums; for fragrance—mignonette; for training up and about the window — morning glories. Among other good plants, not annuals, geraniums, both double and single, are excellent; also verbenas, heliotropes, and roses of the ever-blooming class. If I wanted a window-box that would be as near perfection as possible in the beauty and fragrance of its bloom, I would have a *Perle les Jardins* rose — rich yellow and very sweet; a few dark purple and a few pale yellow, white, and sky-blue pansies, a heliotrope, some mignonette to droop over the sides of the box, a rose geranium, and morning glories at the ends to train up over the window. You would not be likely to get as many flowers from such a selection as you would from annuals, like those named above, but what flowers you did get would be so choice, so exquisite in color, sweetness, and form, that you would find them more satisfactory if you are at all fastidious in this direction. From such a window-box one can cut a dainty button-hole bouquet every day during the season, if it is carefully cared for; and what could be lovelier than a yellow rose-bud and a purple pansy, with a geranium leaf, or a cluster of pale yellow, white and blue pansies, unless it is a Perle rose, just opened wide enough to give you a glimpse of its golden heart, with a cluster of lavender heliotrope?—American Agriculturist.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

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ADVERTISING RATES quoted on application. Circulation, 5,000 copies per month.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

Notes and Comments.

FRUIT GROWERS in P.E.I. are organizing a provincial Society, and are asking for Government patronage.

——

THE TABULATED RESULTS of Mr. Orr's work, which appeared on page 156, should be credited to W. H. Heard, London, who prepared it for his catalogue of spramotor pumps.

——

THE HAMILTON HORTICULTURAL SOCIETY held a monthly meeting on Monday evening, May 2nd. An address was given before the Society on "The Garden and Lawn," by the Secretary of the Ontario F. G. A.

——

SAN JOSE SCALE.— Articles appear from time to time, copied from American papers, which lead one to suppose that too much alarm has been aroused, and that the insect is not so terrible a pest after all. One has only to visit orchards that are affected, and that are dying with the Scale, such as we have seen, to be convinced that the danger is a real one.

——

RASPBERRIES have in many instances been rooted out this season because unprofitable. Indeed, last year the writer counted a cash loss of $25 on two acres of Cuthbert raspberries, and many other fruits gave similar results; but we have not dug out either the raspberries or the other fruits, believing that low prices will not always prevail, and that it is unwise to be fickle in fruit cultivation. We shall be false prophets if better results do not meet the fruit grower in 1898.

——

THE WAR between the United States and Spain may possibly serve to increase

the prices of Canadian fruit products. The import of the banana will, no doubt, be lessened by it, and this fruit, so cheap and so popular, has done more than anything else toward lowering the price of our native fruits. This, coupled with the unfortunate frosts above referred to, may cause a sharp advance this season in the values of our native fruits.

FROST BITTEN FRUITS.— According to the California Fruit Grower, a storm of frost and snow, about the middle of April, has swept not only through California, but also northward and eastward from Northern Texas, virtually ruining the fruit crop in Arkansas, Missouri, Tennessee, Kentucky, Indiana, Illinois, Ohio, North Carolina, Virginia, Maryland, Delaware, New Jersey and Connecticut. Peaches have suffered most, but cherries, pears and even apples have suffered more or less. Fruit on the Pacific Coast has suffered more than almost ever before, peaches and apples being the principal sufferers, while nearly all classes of fruit will be reduced one-half.

THE COLD STORAGE FOR FRUIT at Grimsby has just been completely remodeled, under the direction of Mr. MacFarlane, cold storage inspector, for the Department. The accommodation has been doubled, and instead of cooling the store rooms by means of direct currents of air from the ice room as last year, the air will be cooled by means of a double row of large galvanized iron cylinders, each about a foot in diameter, which rest in a trough below, and are to be kept full of ice and salt, shovelled in from the smashing floor above. This building is now, in our opinion, a model refrigerator building for fruit storage, and will no doubt be the kind erected by fruit growers in all the fruit districts, where tender fruits are grown for export. We have the fullest confidence in this building, and invite inspection of it by any growers interested. It is situated at the G. T. R. depot, at Grimsby.

MR. R. TROTTER, a prominent fruit grower at Owen Sound, died Tuesday, 10th May, at Owen Sound. He was a prime mover in the formation of the local Horticultural Society of that place.

THE VIRGINIA CREEPER has for two years been subject to the thrip which has become so numerous, and so annoying when one passes by, that we are questioning the wisdom of continuing the use of this old and useful climber for the porch of a house. We will faithfully spray it with kerosene emulsion, and, if successful in destroying it, we will report later on.

ALYSSUM SAXATILE and *A. S. Compacta* are just now (May 15) in full bloom in our garden at Maplehurst. Everyone is familiar with the common Sweet Alyssum, but this is far more showy, with its corymbs of bright yellow flowers, not much larger than those of the Forget-me-not, which are in bloom at the same time. This species was introduced from eastern Europe in 1710, and Compacta is a new and valuable variety.

THE PLANTS AND TREES sent out by the Association to its members this spring have given unusually good satisfaction, and numerous have been the complimentary letters received from Secretaries of Societies and others, concerning them.

Never before has so large a list been sent out, amounting in all to 3729 pack-

ages in all. The *Crimson Rambler* rose was most called for, and 1585 large two year old plants were sent out. The Wickson plum was large enough for orchard planting, and was called for next in order, the number sent out being 1255. Besides these there were 434 Peonies, 288 packages raspberry plants, and 167 Victoria Black Currants. We hope the special effort made by the executive to please will lead to increased membership in all our Societies, for it has not been done without considerable extra expense. The greater the membership the more wide will be our influence; and the more money we have to spend the more generous we can be to each member.

THE INSPECTORS of orchards are doing faithful work in the Niagara District under the charge of Mr. G. E. Fisher, of Burlington. Cases of infested orchards have been discovered near the United States border, and are being destroyed root and branch.

At the suggestion of the Provincial Minister of Agriculture it is proposed to make each of our fruit experimenters a referee to decide cases of San Jose scale in his district, thus co-operating as far as possible in the work of detecting its existence in any orchard in the province.

THE PROSPECTS FOR an extraordinary fruit crop never exceeded those of the present season. The pear orchards are literally white with bloom, the peaches are a beautiful pink, the cherry and apple promise equal to any year in the history of Canadian fruit growing. The reports so far received, seem to indicate that this condition is universal throughout the province. That pests will also abound, we doubt not; already the aphes is present on the cherry, and the rose, and the webworm is on the apple and pear. The scab may possibly not appear, if June is a dry month, but as Prof. Bailey remarks, we should spray as an insurance policy on the fruit, and it will be money well spent.

EXPORT OF FRUIT.—The great question facing us fruit growers this year, especially in view of the possibility of an enormous crop of fruit of all kinds, is the export trade. Can we succeed in placing our fruit products in the great markets of the world in good condition. Last year we had both failure and success, but not enough success to warrant private enterprise to any great extent. This year no effort is to be spared on the part of the Minister of Agriculture for the Dominion, and of the growers interested, to make this important undertaking a complete success, and of all this the CANADIAN HORTICULTURIST will give its readers the fullest information.

THE PRICE OF NURSERY STOCK has not advanced, notwithstanding the exclusion of United States stock, and nobody seems seriously inconvenienced by the San José Scale Act. American nurserymen who had made sales in Canada, have simply bought their stock wholesale from Canadian nurserymen, and packed their orders this side the line; while the surplus was so great in Canada, that fine trees have been almost given away. Fancy, beautiful pear trees, three years of age, wholesaling at from 7 to 10 cents each and peach trees at 5 cents, when a few years ago they could not be bought for less than three times these prices.

Strange that when peach and pear trees are so cheap, our fruit growers do not seize the opportunity of planting

largely. Discouraged by the low prices of one or two seasons, they have given up these fruits, and encouraged by the high price of apples in 1897, all want to plant apple orchards. Mr. W. E. Wellington says that the Fonthill Nurseries sent out over 300,000 apple trees this spring! Next year, should apples be cheap, no doubt our fruit growers will again begin digging out their apple orchards. Why this unrest? There is rise and depression in all lines, and the wise man keeps straight on in his chosen lines, whether he is on the crest of the wave, or in its hollow.

THE WESTERN HORTICULTURAL SOCIETY of Manitoba has recently been organized, and the President, the Rev. Prof. Baird, of Winnipeg, has forwarded us a copy of the following resolution, passed at a meeting held on the 15th of March.

It was moved by Mr. H. C. Whellams, seconded by Mr. G. H. Greig, and agreed unanimously that, while the Western Horticultural Society cannot agree to affiliate with the Fruit Growers' Association of Ontario, on account of the differences of climatic condition which renders such an intimate degree of co-operation impossible, yet this Society thanks the Ontario Association for the friendly wishes which are expressed in its proposal, and asks that it be allowed to co-operate with the Ontario Association in any free and harmonious way which may be found to be mutually desirable or beneficial.

It is a great pleasure to us to find so firmly established and influential an Association as yours taking so friendly an interest in our small affairs, and you may rest assured that we will do anything that lies in our power for the promotion of the interests of horticulture throughout Canada at large, and for the promotion of good will and friendly intercourse between your Society and ours.

CALIFORNIA'S FRUIT PRODUCTS are enormous. It is estimated that her export of cured fruits alone, during the past season amounted to 150,000,000 lbs., which would require 600,000,000 lbs. of fresh fruits. California has shipped in addition about 230,000,000 lbs. Mr. Glen writes, "California's fruit crop is immense, and yet the industry is in its infancy. The market is extending as rapidly as the crop is increasing, because a regular supply of prime fruit creates a demand. Mind and capital are united in California fruit production. Careful selection and packing is the rule when shipments are made. The average results are satisfactory. Ontario fruit growers have no greater difficulties to contend with than those of California, and they are nearer to the world's best markets.

CRIMSON RAMBLER is the greatest rose that has been introduced in modern times. It may not be hardy everywhere, though I have not heard of any place where it is not so. It is distinct in growth and in manner of blooming. The third year after planting it will make canes from eight to fifteen feet in length, and at the base will be nearly as thick as a broom handle. It blooms in clusters composed of large numbers of double flowers about the size of a double cherry blossom. It blooms only once a year, it is true, but it is a grand sight for three weeks or a month after it commences to flower. The flowers are a bright cheerful shade of crimson, and it has a very telling effect in the landscape, no matter whether the garden wherein it is planted is small or in the more pretentious pleasure grounds of the wealthy. —American Florist.

Question Drawer.

We shall be glad to answer all questions relative to Horticulture, Floriculture, and Forestry, in these columns, but cannot undertake to send answers to such questions by mail.

Red Spider on Datura.

1011.—Please tell me through HORTICULTURIST, what to do for a small insect that infests the Datura Brugmansia. It is a very small insect of a greenish yellow color, and is on the under side of the leaves which turns yellow and falls off. You will find a leaf enclosed.

F. J. FRAMPTON.

Reply by Dr. Fletcher, Central Experimental Farm, Ottawa.

Mr. Frampton's *Brugmansia* is attacked by the ordinary Red Spider. The best remedy for this is to fertilize the plant well if he has it growing in a pot, repot if necessary and stimulate with a little nitrate of soda (in the proportion of one ounce in three gallons of water) once a week for the three weeks or one of the specially prepared fertilizers for house plants such as Albert's Horticultural Manure, Bouker's Plant Food, etc. There are many of these put up in convenient tins and all of them useful and very similar in composition. This will strengthen the plant very much and help it to overcome the injury which has been done to the leaves. To check the increase of the insects the plants, if not too large, should be inverted and thoroughly washed in a basin of soapsuds, made preferably with whale-oil soap, but, if this is not convenient any ordinary soap will do. While still wet, the plant should be dusted, particularly beneath the leaves, with powdered sulphur. Spraying plants with finely powdered sulphur in water is an excellent remedy for the Red Spider. Upon large plants, shrubs or trees out of doors, spraying with kerosene emulsion is the best remedy for Red Spider. The remedy frequently recommended of spraying with pure water so as to keep the air damp, I have found of very little use, even in a greenhouse.

HOUSEKEEPER.—"It's queer that the potatoes you bring should be so much bigger on the top of the basket than they are at the bottom. Grower.—"P'taters, ma'am, is growin' so fast now that by the time I git a basketful dug the last ones is ever so much bigger than the fust ones."—Credit Lost.

HERE is a stereotyped jokelet seeking recognition: "Hello," said the chestnut to the robin, "what are you?" "I am a little bird," said the robin, "and what are you?" "I'm a little burred, too," said the chestnut.

⁂ Open Letters. ⁂

The Best Sugar Industry.

SIR,—The time is not far distant when the consumption of sugar in the United States and Canada will reach 5,000,000 net tons. The per capita consumption in the United States in 1897 was 85 pounds. By 1925 the population of these two great English speaking communities will be not less that 130,000,000. If the per capita consumption is 85 pounds the total amount consumed will be 5,575,000 tons, at an average price of 3 cents per pound or $60 per ton the value will be $334,500,000. At the present time we do not produce in the two countries 10 per cent. of the sugar consumed. We can produce all of it from beats alone. The market already exists. It is but to be developed, the demand ever increasing, is as permanent as human existence upon this earth.

Shall we continue to import 90 per cent of our supply. Is it wise for any intelligent community to be dependent upon foreigners for a prime necessary of human life, when ordinary skill can produce it at home at a large profit. A sane child will answer this question in the negative with a big no. Sugar (refined granulated) has been made at Rome very successfully from beets and will be made this coming fall. The soil and climate of Ontario, south of Toronto, Guelph and Goderich is far better adapted for the production of the Sugar beet than in the vicinity of Rome. Frosts continue later in the spring and come earlier in the fall at Rome, than in the section of Canada named above. Twelve and one-half tons of beets per acre is an average crop on a large scale. They are worth net at factory in cash $4 per ton or $50 per acre. An acre of beets should produce 3,000 pounds of sugar. The product at that price gives the beet grower and the sugar refiner a good profit, and the consumer, cheap, pure, refined sugar. If the raw sugar is produced in Germany, Java, Cuba or Brazil, the consumer in America must pay freight, and charge upon it to the point of consumption in addition to cost of production. If it is produced in the State or country in which he resides, cost of transportation is small. Ontario has the land, the capital and the skill to produce sugar from beets, and a home market at present for not less than 350,000,000 pounds which now costs the consumer not less than $20,000,000 annually.

Our fruit canning and preserving industry is in its *infancy*. Cheap sugar will promote development.

In your climate sugar is a good fuel for the production of heat in the human animal. It can be produced at a fair profit at 3 cents per pound in Ontario.

Land upon which beets have been grown is in prime condition for other farm crops. The Government of Ontario should promote this great and valuable industry.

The average value of one acre of beets well cultivated, is as much as the average value of four acres of wheat or barley.

I have given the question much study the past six years, and may, if your readers desire it, write further upon the subject.

FRANCIS WAYLAND GLEN.

Brooklyn, May 14, 1898.

New Fruits Wanted.

SIR,—For the past thirty years those who undertake to originate new varieties of fruits have been trying to produce a first-class strawberry that would ripen very early because very early fruit commanded a high price. The refrigerator car has made it impossible for growers of strawberries in this vicinity to secure an extra price for very early berries. We begin to receive them from Florida and Louisiana March 1st, and then later from Georgia and Tenessee, and later still from Virginia and Maryland, and by June 1st when they come in from New Jersey and Long Island the price is low. It is surprising how many strawberries can be sold in this market at 25 cents a quart retail. We have in greater New York, Jersey City and Newark, say, 8,000 grocery-men who sell green fruits. If they sell only 12½ quarts each per day this total sale is 100,000 quarts at $25,000. In addition is the retail fruit dealers, hotels and eating houses who buy direct from the wholesale dealers and beside there are thousands of men who hawk them through the residential streets from house to house. From five to ten such dealers call at our house every day with all kinds of vegetables. After the local growers sent in the greater part of their crop the prices go up from day to day until prime berries command large prices. The weather is very hot and the appetite for acid fruits is very strong. At 15 cents per quart this sale of prime strawberries in July in this market would be enormous. A good late strawberry, the later the better, would be a money-getter. They can be sent here in refrigerator cars from Ontario, Quebec, New Brunswick and Nova Scotia cheaper and in less time than from Georgia or Virginia. Twenty car-loads per day containing 10,000 quarts each would not glut this market in July.

The man who first originates a prime late strawberry that will bear transportation will reap a liberal reward.

FRANCIS WAYLAND GLEN.

Our Book Table.

GARDEN MAKING, by Prof. L. H Bailey, The MacMillan Co., N.Y., 415 pages. Price, $1.00.

It is a satisfaction to the average reader to find that the contents of a book are correctly indicated by its title. Writers frequently in straining after a striking title lose sight of the subject matter of the volume it represents—for it must not be supposed that the title of the book is fixed anterior to its construction. "Garden Making" is filled with suggestions for the utilizing of home grounds. The various ways in which home grounds may be utilized are fully outlined and clearly described, and how much there is in the manner in which an operation or a method is described. The volume is divided into six sections as follows: I. General Advice. II. The Plan of the Place. III. Planting the Ornamental Grounds. IV. The Fruit Plantation. V. The Vegetable Garden. VI. Seasonable Reminders. One of the most interesting chapters is that on the planting of ornamental grounds. Here the suggestions are particularly attractive, nature like effects, instead of studied and symmetrical figures, the idea that common plants may be used with rich effect, that sometimes a healthy burdock is as useful as a high priced exotic; these thoughts, with specific instructions for the preparation and maintainance of the lawn, make the chapter peculiarly interesting and valuable. Prof. Bailey has been assisted by Profs. Waugh, of Vermont, and Taft, of Michigan, who contribute respectively a chapter on vegetables and on fruit plantations, both of which are valuable. This volume is one that contains a large amount of useful information, and is, apart from its interesting and readable style, a book that will be appreciated by the gardener and fruit grower.—J. C., Ithaca, N.Y.

THE HORTICULTURAL REPORT of the Western N. Y. Society is to hand, and fully keeps up its excellent reputation. Probably no other reports contains so much up-to-date information on fruit culture. The Secretary is Mr. John Hall, 409 Wilder Building, Rochester, N.Y.

MR. F. BRUNTON, landscape gardener, who advertised in our pages last season, has removed to 136 Boylston St., Boston, Mass. He has received several orders with cash, from our readers, which he writes he will return. Two of the letters did not give the address of the senders. He has opened out business in Boston, as importer and grower of plant seed ,and bulb specialties, a business in which he is an expert.

THE PRUNING BOOK, a monograph of the pruning and training of plants, as applied to American conditions, by Prof. L. H. Bailey, of Cornell University, McMillan Co., New York, 1898. Price $1.50.

This excellent book deals in the most intelligent manner with the Philosophy of Pruning, the Fruit Bud, the Healing of Wounds, the Principles of Pruning, Root Pruning, some Scientific Modes of Training, Grape Training, etc.

MR. F. BRUNTON, of 136 Boylston Street, Boston, has opened a Hardy Plant Club and Exchange, in connection with his business.

THE CENTRAL PRISON LILY POND.

THE
CANADIAN HORTICULTURIST.

VOL. XXI. TORONTO, 1898. JULY. No. 7

RAMBLES ROUND TORONTO.

MANY pleasant holiday hours may be spent in and about Toronto's parks, gardens and conservatories by the horticultural enthusiast, and if he be a lover of uncultivated nature also, he will find much beauty and charm in the rolling and picturesque country that girdles the monotonously level site of the town on all its landward sides. Turning first to the eastern suburbs, we may note as a place of interest the grounds of Leslie Bros., the pioneer nurserymen of the Province. Toronto's employment of the horse chestnut as its principal tree for avenue planting, was due to the accident that Leslie Bros. had a large stock on hand, and were willing to furnish it at a lower rate than other trees. A glimpse of Queen Street Avenue or Sherbourne Street at the end of May, when the trees are a mass of snowy spikes, will do much to reconcile one to the arrangement, though the stately American white elm or one or two varieties of the maple such as the sugar or the silver-leaved with their pleasing symmetrical shapes and their color effects are perhaps to be preferred for ornamental street planting. Further east lie the trim trial-grounds and extensive greenhouses, for palms, cut flowers and decorative plants, of the Steele, Briggs Seed Co, and Munro Park, where the Street Railway Co. as a speculation, is building a pavilion and making other improvements? Victoria Park is beyond this again. From Munro Park, winding ways lead up the wooded Norway heights and on through a picturesque old orchard to a grand old place, little known to the general public, but interesting to us for its trees. This is Blantyre Park, and the Gothic Mansion in the centre is where Archbishop Ryan seeks the quiet and repose of country life during the heat

FIG. 1372.—A SCENE IN ROSEDALE.

of summer. The St. John's Industrial School for Boys, founded about five years ago, occupies the large brick building at the southern end of the grounds. Mr. Peter Paterson, a merchant, enthusiastic in arboriculture, used to live here, and got together a collection of trees of great variety. A broad carriage drive sweeps in from the north through the belt of evergreens that faces the road, bends like a bow and sweeps out at the south, and it is behind this drive that the bulk of the plantation, a growth of some forty-eight years, with its graceful groups and scattered specimens, of picturesque and stately trees, gives charm and majesty to the landscape.

Conforming with an old gardening practice, a terrace with formal flower beds surrounds the house, and serves to ameliorate the contrast between the stiff artificial lines of the building, and the natural beauties of the park. In the rear of the edifice lies a pretty old-fashioned fruit-garden, with rectangular plots bordered with box, indicating the old-world tastes of its designer, and recalling perhaps, to the mind of its present occupant the scholarly prelate, that delightful description of an ideal garden depicted "in good Queen Bess' glorious days," by the pen of the illustrious Francis Bacon. Treating of this garden, Bacon says :—

"For the main garden I do not deny that there should be some fair alleys ranged on both sides with fruit-trees and

some pretty tufts of fruit-trees, and arbours with seats set in some decent order."

By the way, talking of the much abused, old-fashioned formal gardens, with their quaint, but not very tasteful art of "vegetable sculpture"—trees and hedges clipped into various shapes—pyramids, vase forms and such like, and even figures of birds and animals, we must, at least, concede that they were designed for use and comfort, for Bacon goes on to speak of not setting the trees too thickly, but "to leave the main garden so it be not close, but the air open and free. For as for shade I would have you rest upon the alleys of the side grounds, there to walk if you be so dis posed in the heat of the year or day; but to make account, that the main garden is for the more temperate parts of the year, and in the heat, for the morning and the evening or overcast days." In another passage he says, "You are to frame some of the alleys for shelter, that when the wind blows sharp you may walk as in a gallery, and those alleys must be likewise hedged at both ends to keep out the wind, and those closer alleys must be finely gravelled and no grass because of going." Our modern home grounds have not the comfortable arrangements the old gardens had, nor indeed, in towns especially, have they sufficient privacy to make their use enjoyable to their owners. The tendency seems to be more and more all the time to make the grounds merely for the wayfarer. In Buffalo, Detroit, and other American cities, this principle is carried to an extreme and one walks for miles on streets with lovely lawns and gardens, unenclosed, unused by their owners, and in effect mere boulevards.

FIG. 1373.—IN THE VALLEY OF THE DON—NEAR TORONTO.

But to return to our Toronto rambles,

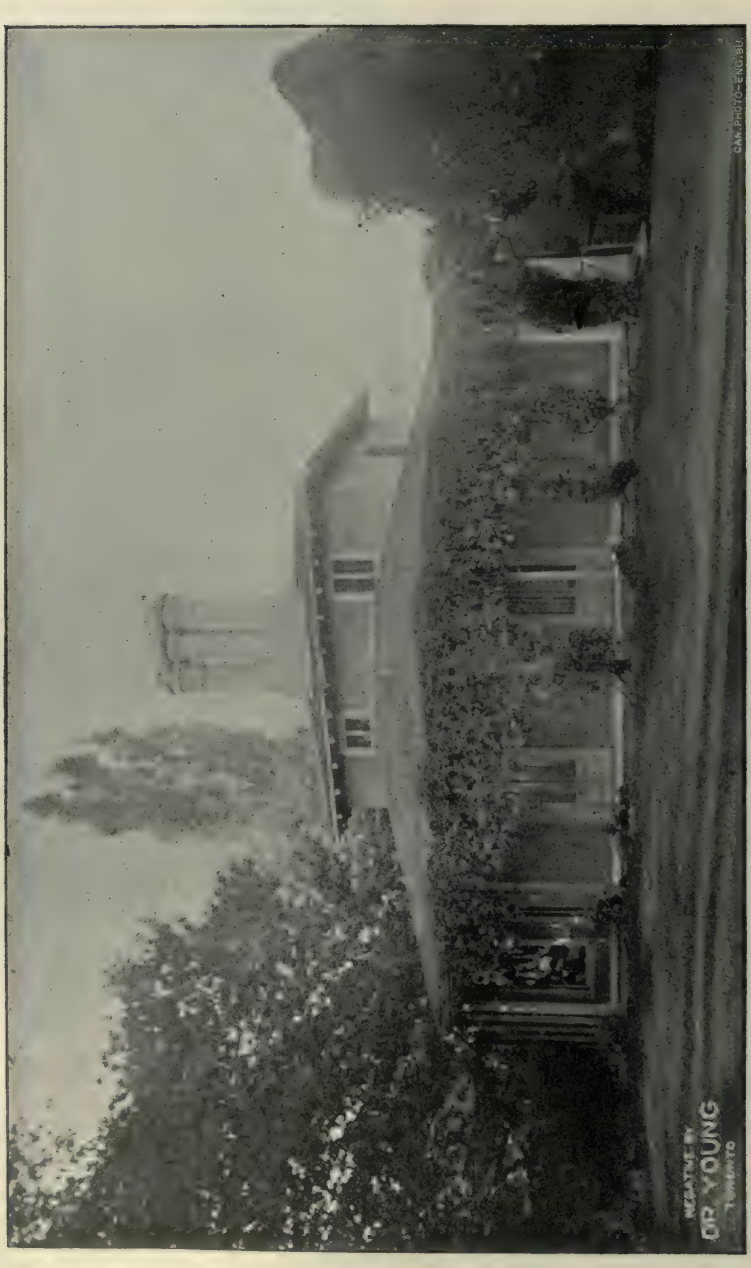

Fig. 1374.—"Howard House," Residence of the Late J. G. Howard, High Park, Toronto.

FIG. 1375.—ON THE HUMBER RIVER—TWILIGHT SHADOWS.

Nearer the city some beautiful vistas are to be had in the Don valley, and also in the Rosedale ravines, as shown in Fig. 1372. Fig. 1373 depicts a sylvan glade in "Brooke's bush," at Hogg's Hollow some seven miles up the Don, and four miles north of the city. Hogg's Hollow is named after a miller who was engaged in his occupation there in Rebellion Times of 1837, and is a lovely and picturesque spot.

From here, retracing our steps to the town, we pass by Mount Pleasant Cemetery, that tranquil, beautiful resting-place of the dead, and Reservoir Lake a crystal gem crowning the hill behind Toronto, but turn aside to observe more closely a novel floral sight. At the water-works pumping house in July and August, the pond is ablaze with water-lilies of all shades. "A feast of lilies and lily pads." The delighted eye ranges over the rainbow-like reflection on the waters, the wonderful deep blue of the Zanibar lilies, a foot in diameter, the snowy cups of our own native lily, the deep rosy pink of another African species, also twelve inches wide, and of the very rare Cape Cod water-lily, the pink and white of the giant Egyptian lotus rearing on a stalk six feet high, and its flowers enormous —a dream of beauty. Here too, are the splendid night blooming lilies:—Nymphæa rubra, a native of India with "immense cups of glowing carmine" and rich brown leaves; Nymphæa dentata and Nymphæa lotus, snowy beauties from Western Africa, and "queen of them all, Nymphæa Devoniensis, surpassing in brilliancy of flower, if not in size of leaf, the famous Victoria Regia." "A single plant of the Devoniensis will in one season cover a circle twenty feet across, with leaves twenty-five inches in diameter, and flowers twelve inches from tip to tip of petals. The leaves are rich green with serrated edges and occasional brown blotches. No person can form an adequate idea

of the beauty of a red water lily until he has seen one of these gorgeous blossoms. They are rosy red (with scarlet stamens), glowing by lamplight with undescribable color." In the ponds at the Central Prison of which our frontispiece will give a good idea, there are water lilies too, but they do not thrive so well as at the water-power works, the water not being so warm. The temperature in the pond at the latter place often rises to ninety or one hundred degrees Fahrenheit. The Central Prison gardeners can boast however of the Victoria Regia, with its leaves 6 feet in diameter, and flowers from twelve to sixteen inches across.

One of the chief sights of floral Toronto is Mr. J. H. Dunlop's establishment. He has at present eighteen greenhouses, and in a month or so when the three houses under construction are finished, he will have 110,000 square feet under glass. If the twenty-one houses were thrown into one, it would cover a space nearly a mile long and seven yards wide. There are to be seen 30,000 rose bushes, 20,000 carnations, 10,000 violets; besides rhododendrons, azaleas, hyacinths, tulips, daffodils, lilies, smilax, and the humble asparagus and mushroom. At easter tide his houses were like a beehive with their throngs of visitors.

Our last illustration is of the Humber river, which shows it at its loveliest at the close of day, the reflections in their intensity reminding us of shadow River Muskoka. The Humber was once the great highway from the Northern Lake regions by which the Indians and the old French colonists travelled to the trading post at Toronto, the valley of the Holland river forming the northern portion of the trail. A favorite resort for the canoeist and holiday maker, it also has much interest for the botanist in its different wild growths, water lilies, cypripediums, pitcher plants and many others, and for the ornithologist in its varied bird life.

Not far from the Humber is the Howard House, the gift of the late Mr. J. G. Howard to the city. Hard by the house the monument of the donor rises enclosed on one side by a massive iron fence, which bears the inscription,

"Saint Paul's Cathedral for 160 years,
I did enclose:

"Oh! stranger look with reverence,
Man, Man! Unstable man,
It was thou who caused the severance."

Curious relic of the past, it was part of the original railing round St. Paul's, London, England, and on the way across the sea went to the bottom with the vessel that was carrying it. Heavy and cumbrous as it was, it was yet recovered and forwarded to its destination. A sweet wild garden surrounds the house, where as we write:

"Fair handed Spring unbosoms every grace,
Throws out the snow-drop and the crocus first,
The daisy, primose, violet darkly blue,
And polyanthus of unnumbered dyes."

And here we end our rambles, realising that "the speech of flowers exceeds all powers of speech."

A. E. MICKLE.

Maplehurst, Grimsby.

SAUNDERS' SEEDLING BLACK CURRANTS.

FIG. 1376—SAUNDERS' No. 12, PHOTO 1896.

AMONG a collection of seedling black currants sent to Maplehurst by Dr. Saunders, of Ottawa, in 1896, we have taken special notice of one which gives promise of greater productiveness than any of the others.

Not only are the berries a good size, but what is of greater importance with a black currant, the branches are full and hang pretty closely along the branch. If this number continues its good qualities in 1898, we shall propagate it as being of sufficient importance to be distributed among the members of our Association.

Black currants have, it is true, a rather limited market in Canada, yet they bring a much higher price than red currants. In Europe there is a good demand for them, and being good shippers, no doubt we could easily place them on the British market. The great point is to get a productive variety, and this we are inclined to believe will be found in Saunders' No. 12.

THE CURRANT APHIS, (*Myzus ribis*).

COMPLAINTS have been received from Orillia that some species of louse was very injurious to the black currant bushes in that vicinity. No doubt it is the currant aphis, which is especially injurious to the red currant, but which also attacks the black currant. The first evidence of their presence is the red bladder-like galls on the leaves, which when badly infested become greatly distorted and curled. As a result these leaves drop from the bushes and the fruit ripens prematurely. This

species of aphis is of European origin. The winter eggs hatch early in spring, and the galls which are caused by the young insects usually contain one female with three or four young. The males do not appear until late in the summer.

Fortunately there are natural enemies, such as larvae of ladybird beetles, of syrphus flies, and some parasites.

Of the remedies that may be employed for these and other species of aphis, we may mention as very effectual a strong solution of whale oil soap, 1 lb. to 7 gallons of water, two applications (1) about first of June and (2) about the middle.

Kerosene emulsion is also effectual. In some instances we have used pure kerosene emulsion, where we could apply an exceedingly fine spray; but otherwise it is injurious to the plant life.

For success in overcoming the aphis, it is very important to begin early, just as soon as the first few lice are observed. If the leaves are badly curled before spraying is begun, it is well to first clip off the badly infested portions of the branches, and then spray thoroughly.

THE LEAF CURL.

ACCORDING to Bulletin 92, Ohio, it is shown that the leaf curl flourishes under conditions of low temperature and abundant rainfall for April and May, especially if these conditions follow a season of excessive leaf curl. Two such seasons following each other have just been experienced, and there is widespread complaint of the curling, coloring and falling of the leaves affected with the fungus. It has also been noted that the leaf curl prevails to a greater extent upon several fine varieties, including Elberta, Oldmixon, Mountain Rose, Globe, the Crawfords, Red Cheek, Chair's Choice and some others, while Salway, Smock, Wheeler and some others are much less susceptible, though somewhat injured at times. Trees badly attacked by curl are liable to drop much or all of the fruit.

It has been shown by many tests that Bordeaux mixture is a profitable fungicide for scab, pustular spot and leaf curl, the stronger mixture being used for the application before blossoming, while half the strength can be used to good advantage after the leaves are out. The first spraying for leaf curl, to be effective, must be made as the buds are swelling and just before the blossoms open, followed by another after blooming. These two sprayings in 1897 reduced the proportion of curled leaves (diseased) from 88 per cent on unsprayed to 41 per cent on sprayed, a difference believed to be sufficient to hold the crop of fruit. The results are even more striking when unsprayed trees were compared with those treated two years in succession. In 1897 such had but 7 to 8 per cent of curled leaves while the unsprayed for the same time had 88 per cent curl.

HOW TO RAISE TOMATOES.

IF good crops of any kind are to be secured, begin with the plow. If you have only two days in which to prepare your ground and put in a crop of tomatoes, by all means use a day and a half in preparing the soil. Make it fine, pulverize it. Keep the harrow going as long as your conscience will let you, and then harrow some more. If the dirt is lumpy, roll it, then harrow, and just before setting out the plants go over the land with a weeder—one of the most valuable machines yet invented. It leaves the land smooth and fine. Of course in a garden the hand rake answers the same purpose as the weeder.

If stable manure is to be used on the tomato field let it be thoroughly rotted. Do not, under any circumstances, use coarse green manure. I would prefer none at all. Whenever stable manure is used, it should be plowed under in the fall. It is the practice of a great many people to dig a hole and put in a shovelful or two of stable manure, throw on a little dirt and set the plant on top of it. If a rank growth of vine and a lot of green tomatoes are wanted, this method will be sure to give perfect satisfaction. I experimented with many kinds of fertilizers for tomatoes, and am still experimenting, but up to the present time and with my present knowledge of the matter, know of nothing that will give as satisfactory results as the following, which has produced, so far as can be learned, the largest crop of ripe tomatoes ever grown. After the plants were set, a good handful of Bradley's complete potato manure was scattered well about the plant, being careful that it did not touch either leaf or stalk, then about a tablespoonful of nitrate of soda and a good large handful of hard wood ashes were scattered about each plant, and the weeder run over the field. This thoroughly rakes in the fertilizer. The same dose was repeated just after the fruit began to set. This treatment gave not an excessive growth of vine, but the largest crop of ripe tomatoes ever grown, or at least the largest I have ever heard of. It gave me ripe tomatoes by the bushel in 49 days from the time the plants were set in the ground, the variety being the New Imperial. These plants were given clean culture and were not trimmed or racked up in any manner.

I can not recommend too highly the use of nitrate of soda in growing tomatoes, especially where early ripening is desired. When used at the rate of 150 to 175 lbs. per acre, and in connection with wood ashes the total yield of early tomatoes will be very largely increased. A larger quantity of nitrate will increase the yield of fruit, but at the expense of the net profit on the crop. However, great care must be exercised in the application of nitrate of soda to any plants, and especially to the tomato. It should not come in direct contact with either the stalk or roots.—Amer. Agriculturist.

THINNING FRUIT.

FIG. 1377. Effect of thinning on the size of native plums (after Wisconsin Station).

NOW that we are making some definite practical tests at Maplehurst, of the possible advantage of thinning fruit, it is interesting to find confirmatory testimony coming from other sources. Farmers' Bulletin (U. S.), 76, says: Thinning the fruit of trees that have a tendency to overbear, is recommended very generally, and practiced very little. Few extended experiments in thinning fruits have been reported by Experiment Stations, but where thinning has been followed systematically for a number of years in commercial orchards, it has been found profitable.

The number of fruits produced per tree may be regulated in two general ways: By pruning away a part of the branches to prevent the formation of too much fruit, or by picking off the superfluous fruits soon after they have formed. With such fruits as grapes, raspberries, blackberries and the like, the former

method is employed almost exclusively.

Among orchard fruits perhaps none need thinning as much as Japanese plums, except peaches which, in commercial orchards, are thinned more systematically than any other fruits. It is reported that in favorable years the fruits of Japanese plums set so thick as to hide the limbs. In fact, the tendency to overbear is considered by some to be one of their greatest faults. Thinning the fruits of these plums has been favorably reported on by the Alabama College Station. The size of the fruit was increased noticeably by thinning.

The tendency to overbear is also seen in case of some varieties of native plums, as is shown by an experiment with the Gale seedling plum at Wisconsin Station. About four-fifths of the fruit was removed from a portion of a tree, leaving the fruits about 2 inches apart on the branches. The fruits on this portion of the tree were considerably larger than on the unthinned portion, as is shown in the illustration (Fig. 1377.)

The Massachusetts Hatch Station has reported the results of an experiment with apples and plums. A tree each of Gravenstein and Tetofsky apples was thinned on July 1, and a similar tree of each variety left unthinned as a check. In case of the Gravenstein the yield on the thinned and unthinned trees, respectively, was first quality fruit, 9 bushels and 2½ bushels; second quality fruit, 1 bushel and 2½ bushels; windfalls, 9½ bushels and 10½ bushels. In case of the Tetofsky the thinned trees gave 1 bushel of windfalls, and the unthinned tree 3 bushels; of second quality fruit the yield was one-half bushel from each tree; and of first quality fruit the thinned tree yielded 2 bushels and the unthinned tree none at all. Allowing 60 cents per bushel for firsts and 25 cents per bushel for seconds, the market value of the thinned Gravenstein apples was over twice as much as that of the unthinned, and of the thinned Tetofsky apples eleven times as much as that of the unthinned It cost 48 cents to thin the Gravenstein and 25 cents to thin the Tetofsky. The net gain due to thinning was 85 cents for the Tetofsky and $1.85 for the Gravenstein. It is thought that the results would have been more pronounced if the thinning had been done two weeks earlier. The large percentage of windfalls in case of the Tetofsky was believed to be largely due to the fact that the apples have very short stems and are borne in clusters of from three to eight fruits each, so that as they grow they become very much crowded. With trees having this characteristic, therefore, thinning is especially valuable.

The results with plums were similar to those with apples as regards the increased production of fruit. A tree each of Guei and Victoria plums was divided into approximately equal halves, one half being thinned and the other half left as a check. The thinned half of the Guei tree yielded 9 quarts of marketable fruit and the unthinned half 5½ quarts. The yield of marketable fruit from the thinned and unthinned halves of the Victoria tree was 16 quarts and 9½ quarts, respectively. The value of the fruit was taken to be 9 cents per quart, and the cost of thinning 12 cents for the Guei and 18 cents for the Victoria, giving a net gain due to thinning of 20 cents and 41 cents, respectively.

The advantages claimed for thinning orchard fruits are about as follows:— Thinning increases the size of the fruit, gives it more color, and a better flavor. It diminishes the amount of worthless fruit, windfalls, etc., increases the amount of No. 1 fruit, and in some cases increases the total yield.

Thinning should be delayed until there is no further danger of premature dropping of fruit from lack of pollination, the effect of frosts, or other accidental causes. It should be done, however, before the fruit becomes so large as to tax the tree. The usual recommendations are to thin plums when about half grown and before the pits harden; peaches when the size of small hickory nuts or when half an inch in diameter; apples when the size of hickory nuts to 1½ inches in diameter. The amount of fruit removed will depend largely on the previous pruning, and on the age, size, and variety of the tree. The fruits should be left far enough apart so as not to touch each other, and it is often recommended to leave them from 4 to 6 inches apart.

JELLIES AND PRESERVES.

CONSIDERING the expense and risk of exporting fresh fruits it really seems as if our grocers might do more in the way of evaporated fruits, jellies and preserves. The bulk would be so much lessened by the evaporation of the water, or by reducing to jelly that the expense of transportation would be much reduced, while the risk would be almost none. Of course science and skill is necessary to do the work properly, faces us on the start, but if our farmers are being taught dairying and cheesemaking at the expense of the Department, why should they not also be taught jelly making. The following is from the American Agriculturist.

A profitable way of converting some of the surplus fruit on the farm into a salable product lies along the line of jelly making. The great mass of city residents are forced to buy commercial jellies that in many cases are of inferior quality if not positively injurious to

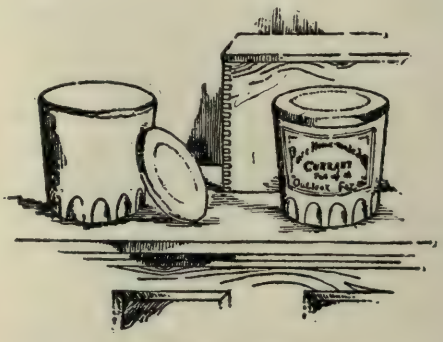

FIG. 1378.—JELLY JARS

health. Thousands that now go without rather than buy the questionable compounds shown in stores, would be glad to patronize a brand of pure "farm-raised" jellies, put up in attractive shape and bearing the imprint of the maker, as a guarantee of excellence. Make the very best article possible; put it up in the most attractive style, and no inconsiderable income can be derived from fruit that is now often practically wasted. Such products are taken in many instances by women's exchanges.

ONTARIO FRUIT CROP REPORT.

PREPARED BY ONTARIO FRUIT GROWERS' ASSOCIATION.

Scale, Very Good, Good, Poor, Very Poor.

	Apples.	Pears.	Peaches.	Plums.	Cherries.	Quinces.	Apricots.	Grapes.	RCurrants.	Blkberry.	Raspberi's.
Essex, Kent and Lambton—A. McNeil	Poor	Very good.	Good	Very good						Very good.	Very good.
Middlesex and Perth.—T. H. Race	Good	Good		Very good.	Very good.				Good		Very good.
Wellington, Waterloo and Wentworth—M. Pettit	Good	Poor	Poor	Good					Good	Good	good.
Burlington District—A. W. Peart	Good	Poor	Very poor.	Poor		Poor	Poor	Good	Poor	Verg good.	good
Durham, Northumberland and Peterborough—T. Beall	Very good	Very good		Very good				Poor	Very good.		
Lennox, Addington and Hastings—Geo. Nicol	Poor to good			Very good.							
Prince Edward Co.—W. H. Dempsey	Very poor.	Poor		Good	Good				Good	Good	
Grey—J. G. Mitchell, Clarksburg	Good	Good		Good	Good.						Good.
Huron—A. E Sherrington, Walkerton	Poor	Good		Very good	Very good				Poor		
Grenville — Harold Jones, Maitland	Poor	Good		Good					Very good		
Wentworth — W. M. Orr, Fruitland	Good	Good	Poor to good	Good	Good			Good	Very good	Very good.	Very good
Ontario — R. L. Huggard Whitby	Poor	Very good	Very good	Good	Good				Poor		

NOTES ON CROP REPORT.

Our early hopes of on extraordinary yield of fine fruit has been sadly disappointed during this decisive month of June. The great staple of Ontario, the apple, which forms so important a part of our export trade, at first promised to be superb, but many varieties did not set well, especially Red Astracan and Greening. Then, came the scab, which even in spite of Bordeaux mixture, three times applied, is very severe, especially on the sheltered side of each apple. So serious is the sudden outbreak of this fungus, now, in the middle of June, that the Department of Agriculture has issued a warning circular, urging the importance of continued spraying. Our reports (see table) show a fairly good crop, but we fear the scab has not been sufficiently considered, or else the scab is less severe elsewhere than in the Niagara district.

Bartlett pears promise a clean, fine sample, though not a very heavy crop, while plums promise quite a good yield.

The following are brief notes from our directors and others :—

A. McNeill, Windsor,

"Peaches. Good, notwithstanding the leaf cure."

"Plums. Very good, although some varieties were somewhat injured by aphis. A number of large orchards in the neighborhood of Belle River had the fruit completely destroyed by hail on the 11th inst."

Mr. W. W. Hillborn, Leamington,

"I think there will be a good crop of peaches, say three-fourths of an average. A number of varieties are very heavy laden. We have been thinking peaches for the last ten days, Crawford type, are very poor."

Mr. T. H. Race, Mitchell,

"Fruit promises more than an average crop in Perth and Middlesex counties. Apples are good, plums extra good, pears good, though not what the blossom promised."

Mr. Thos. Beall, Lindsay,

"I should add respecting pears, that during the last two or three days scab is showing on the Flemish Beauty very badly, even where the trees have already received their third 'spraying' with Bordeaux Mixture. This is occasioned, no doubt, by the unusually warm wet weather during the past week."

Mr. W. H. Dempsey, Trenton.

"Insects have been more than usually numerous, stripping many orchards where not sprayed. This has been the means of compelling many to commence spraying that would not have done so, only on seeing the orchard being stripped of foliage. Fungus has also got a very strong hold this spring early, on foliage as well as fruit."

W. M. Orr, Fruitland,

"Apples scabbing and damaged by a green fruit worm eating to the centre of the young fruit. Peaches too, affected with curl leaf, some probably permanently damaged."

Harold Jones, Maitland,

"Spot is growing on young fruit and will probably make crop of poor quality. Green apple worm has done some damage to plum trees and ruined the black currant crop. Tent caterpillars and bud moth have been very bad, in many cases stripping the trees of all foliage in unsprayed orchards. Spraying is not generally practiced, not over 10 per cent. of the orchards are sprayed in this district."

R. B. Whyte, Ottawa.

"Strawberries have been in many places very poor after blooming time. the weather was cold and dry and fertilization was bad.

Raspberries look very well and will be a good crop. Gooseberries ditto. Currants, red and white dropped the end berries in the bunch more than usual, will be only a fair crop.

Grapes promise well. Apples will be an average. Cherries more than an average.

Plums are going to be the heaviest crop on record in this district. I never saw my trees so loaded with fruit, many of them have far more than they can carry. Guei Fonto Seedling, Glass Seedling, Moore's Artic, and about 10 or 13 P. domestica Seedlings that I have are all loaded with fruit. The aphis has been pretty bad on plum trees, but no great harm has been done yet."

E. C. Beman Newcastle,

"In reply to your request for report on fruit prospects in this section, after careful investigation from present indication would report as follows :

"Apples poor. spy almost a complete failure, the cigar shaped case borer has injured many orchards.

"Pears. On the whole good. Plums, poor. Cherries good.

"Grapes. Not many grown, but good. Small fruits are all very good, especially Strawberries, which are extra fine in quality and quantity. All fruit trees made a fine show of blossom in the spring, but many kinds did not set well. Trees blossomed too early, followed by cold weather."

THE SPRUCE GALL-LOUSE—(*Chermes abietis.*)

Prepared for the Bureau of Forestry by Wm. Brodie, Toronto.

FIG. 1379.—Gall infested twig as seen in fall.

FIG. 1380.—Infested twig of European Spruce, found in Toronto, April, 1898.

IN the spring of 1897 many spruce trees in and around Toronto were found to be more or less injured by a pseudo-gall insect. The galls were enlarged and deformed buds of the previous year, usually towards the tips of the twigs. Investigation showed that these galls were formed by a small insect popularly called the spruce gall-louse, the *Chermes abietes* of entomolo-

FIG. 1381.—Mature gall-louse, magnified 25 diameters, collected September 1st, 1897.

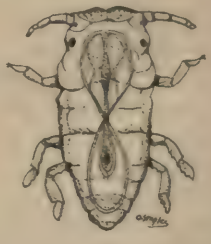

FIG. 1382.—Immature gall-louse immediately after issuing from scales of gall, Aug. 18th, 1897.

gists. A short account of this destructive pest, as then known in Ontario, appeared in the annual report of the Clerk of Forestry for the Province of Ontario for 1897. Since then it has spread with astonishing rapidity and has been detected at many points, from Peterborough to the county of Bruce, where it was lately detected by Dr. Hunter on native spruce trees in a swamp in the township of Culross. It has also been found on native spruces in Muskoka, near Utterson Station. So far it would appear that unless this insect is checked by some artificial means it will soon destroy our ornamental spruce trees and hedges and, extending northwards, do immense injury to our spruce forests.

The trees already attacked by this spruce gall-louse in Ontario are the European spruce, *Picea excelsa*, the double spruce or black spruce, *Picea nigra*, the white spruce, *Picea alba*, and the balsam fir, *Abies balsamea*, and it may also be found on the hemlock, *Tsuga Canadensis*. This insect is native to Northern Europe and was introduced into the United States on imported spruce trees and thence into Ontario, or it may have been introduced here direct from Europe, as for many years there has been an annual importation of young European spruce trees into Ontario

At Toronto the full grown insects—the producers—emerge from the galls, the scales of which open to give them exit, about August 1st. On emerging they are slightly imperfect, but in one day ample wings are developed which enable them to fly long distances. After distribution the female settles on a spruce leaf and lays—under herself—about thirty-five eggs and then dies, resting on the eggs. In about a week the young six-footed larvæ are hatched. They crawl about and find immature buds into which they burrow and of course remain quiescent during the winter. But in the following spring their presence in the bud causes it to develop into a "gall" instead of a normal twig. The lice in the galls give birth to other living lice so that about thirty individuals are found under each scale of the gall. The galls are usually irregularly spherical and often more than a half inch in diameter. When growing they are of a yellowish green color, but during the winter they assume a reddish brown tint, which they retain until the end of May, when they usually fall from the tree. This is the usual form of this gall but there is another form, not a gall, *in which the injury is done in the leaf axils*. As these insects in the feeding stage are within the gall, and the gall is perfectly water-tight, so that no fluid can penetrate, poisoning is out of the question, and as in the migrating larval stage, they do not eat, poison is equally useless. Of course in this larval stage soap emulsions might be of some use if applied abundantly at the proper time. But without any doubt the cheapest and best plan as yet tried in Ontario is to *clip off the galls as soon as they are noticed*—say in June—and *always before the first of August*, while the producers are in the galls, and *immediately burn them up*. When a tree is too much infested to be dealt with in this way it should be cut down and burnt at once. Of course there is no use in doing this after the producers are out of the galls. Several cases are known where this plan was carried out with very satisfactory results, and it is respectfully recommended that all those having spruce trees in charge should carefully see to the clearing of their trees and the extermination of this formidable insect pest. As some of our nurseries are affected, buyers of evergreen nursery stock should be very careful to see that the young trees are perfectly free from this insect pest.

Flower Garden and Lawn.

KERRIA JAPONICA.

FIG. 1383.—KERRIA JAPONICA.

FOR many years this shrub has been grown in the Niagara District, under the name of Japonica, or by some, of Yellow Rose. Neglected, as it often is, the bloom is sparse, and the bush straggling, but recently we have noticed a bush of surprising beauty. It is situated on the north side of the mountain at Grimsby partially sheltered by trees; the soil is moist clay, well drained by a natural slope, and here it grows to great perfection. The bush has grown to a great size, it is full and symmetrical in habit, and on the 2nd of June it was loaded heavily with its golden bloom. Indeed it was a most showy ornamental, worthy a place in any garden, or lawn. We have not seen it outside this district in Ontario, and for those who give their plants only neglect, we do not advise the Kerria Japonica, but for the careful cultivator, who will give good care, and good soil, there is no finer ornamental to be found.

The genus name, Kerria, is after M. Kerr, formerly Supt. of the Botanical Garden at Ceylon. The only species known to cultivation is K. Japonica (Japanese), so-called because introduced from Japan in 1700. There are two forms, the single and the double flowered, the latter being the form usually seen, but the former is the more graceful and the more continuously in bloom. The accompanying photograph shows a branch of the double form, from the bush above mentioned, and will enable any reader to identify the plant. The flowers are orange yellow, solitary and terminal; the leaves are alternate, ovate-lanceolate, serrated; height of bush, 4 to 6 feet.

In addition to these forms there is a sort with variegated leaves, but all are of the same species.

THE TULIP TREE

ADORNING nearly every gentleman's park in Europe, wherever the soil and climate prove congenial to it, the tulip tree is nevertheless but little known in this its native land. It is a pity, that while we have been availing ourselves of the beauties and charms of trees, plants and shrubs, from far off China and Japan, and, indeed, from all parts of the world, we have yet lost sight of one of our own trees of surpassing attractiveness and grandeur. In days gone by, the Tulip tree, now so rare, was to be found throughout the Western Peninsula of Ontario, more especially in the South-western counties, where it was quite abundant, and in the thick forest that then existed west of St. Thomas. It did not, however, make its habitat anywhere east of Toronto, except under cultivation in Prince Edward County, where it succeeded well. With its truly tropical splendor of color in flower and foliage, and its form full of grace and majesty in all its parts, it well deserves to be rescued from its present oblivion, and to be installed as one of our most

FIG. 1384.—THE TULIP TREE.

FIG. 1385.—TULIP TREE—*Liriodendron tulipifera.* (Height 76 feet.)

employed trees, wherever a grand effect in park or avenue planting is desired, or the home grounds are to be beautified.

Liriodendron Tulipifera—The tulip-bearing lily-tree! Such is the title, suggestive of beautiful and graceful ideas that scientists have bestowed on the subject of our paper, and very appropriately is it so named. Its profusion of yellow turbaned flowers in May and June, resemble a veritable tulip garden, its leaves wear the same gloss as the calla's foliage, and its straight, smooth stems shoots up bare (until a great height is reached) of leaves and branches, like some gigantic lily stalk. Let us follow out the whim of describing it by similes and we must then call the leaves violin-shaped, for thus some descriptions concur in characterizing it, while the flowers, poets seem to agree, are like chalices, for Pickering says:

"Through the verdant maze,
The Tulip-tree,
Its golden chalice oft triumphantly displays."

And Bryant following on, makes the same comparison in his lines,—

"The Tulip-tree opened in airs of June her multitude
Of golden chalices, to harmony of birds,
And silken-winged insects, of the sky."

The flowers, to give a more definite description, are solitary, fragrant, of a greenish yellow color, marked within with orange. The sepals are three, reflexed. The corolla, composed of six petals in two rows, has a breadth of about 1½ or two inches.

The leaves are large and handsome, and of a rich bright green hue changing to a beautiful yellow in autumn. The summit has a fine even symmetrical form, in keeping with the elegance of its trunk. In the Western States the tree has been known to attain to a height of 140 feet, but in the Middle and Eastern States and in Ontario it is not so large, though it will reach an altitude of upwards of 100 feet. It thrives best in a deep, rich, well-drained loam, and in a sheltered position. Its roots are, unfortunately, tender, and when large it is difficult to transplant. Small trees should be secured for planting, and care must be taken not to expose the roots to sunshine or wind.

The Tulip-tree has very few insect foes to contend with, the bitterness of the bark and leaves securing immunity for it from all these pests. We would suggest it as a desirable ornament for the home grounds in the southern parts of the Province. For avenues, its stately columnar stems and thick shade-giving canopy of foliage would render it peculiarly suitable, and in parks it would give splendor and charm to the landscape, either standing in an isolated position or forming one element in the composition of a group.

In conclusion, we may add that the tree is obtainable at a moderate price at several of the larger nurseries in Ontario.

A. E. MICKLE.

Maplehurst, Grimsby.

SHOWY ANNUALS.

MANY of the annuals that have a place in seed catalogues are so surprisingly beautiful that a few of the best should in all cases have a place in the mixed border. With but a few exceptions, they do not continue in bloom a sufficient length of time in beds, but in the mixed borders they are of great service in maintaining their attractiveness at midsummer, and are therefore especially useful in gardens where there is an objection to the association of zonal pelargoniums and other of the tender bedders with hardy plants. Some of the best of the annuals for the flower gardens have been already mentioned in these pages, and we now purpose giving the names of a few others that well deserve the most widely extended cultivation.

CALLIOPSIS.

The Calliopsis, or Coreopsis as they are sometimes designated, are much hardier than the majority of the annuals and bloom profusely for a considerable period. Sown in the autumn they come into bloom early in the summer, and plants raised from spring sown seed bloom freely towards the end of the summer, when their flowers are especially valuable. The seed should be sown where the plants are to be grown, and as overcrowding is very injurious, care should be taken to thin the plants to three or four inches in each group before they have become drawn. A moderately rich soil is an advantage, but they are not more exacting in their requirements than the majority of the hardy annuals. The average height is two feet, and they should have a place in the second or third row.

CANDYTUFTS.

The annual candytufts are particularly useful when it is desired to produce a good display of color in the shortest possible space of time, as they grow freely and quickly come into bloom. They do not remain in flower for any considerable period, but they are less ephemeral than is generally supposed to be the case when placed under favorable conditions. As in the case of the calliopsis the seed should be sown where the plants are to remain and the seedlings be thinned to four or five in each patch. Generally they are allowed to remain as thick as "mustard and cress," with the result that they not only last a short time but fail to produce a good effect. With an average height of twelve inches they appear to best advantage in the front row or along the margin. Carmine Dwarf Rose, Dark Purple, and White Spiral are the finest kinds in cultivation.

CHRYSANTHEMUMS.

The annual chrysanthemums arranged in groups, consisting of about three plants each, towards the back of the border, are singularly effective. The practice which gives the most satisfactory results with the least possible expenditure of time, is to sow the seed in boxes, and place in a frame, where they should remain until the plants are an inch or so in height. The plants must then be hardened off and pricked out, where they are to remain three in each group. Atrococcineum, Carisiatum, W. E. Gladstone, and Segetum comprise some of the best. The last named is especially useful for the supply of cut flowers, but on light soils there is some risk of its becoming a weed, unless self-sown plants are kept under.

CLARKIAS.

Although not very continuous in

flowering, the clarkias are so attractive while in bloom as to fully justify their having a share of attention. They appear to the best advantage when arranged in groups of three or four plants each along the second row. There is no objection to the seedlings being raised in boxes, and pricked out where they are to bloom, as advised for the chrysanthemums, but as they do equally well when sown where the plants are to bloom, and as it is desirable to economize time as much as possible, particularly during the spring months, sowing in the open should be generally adopted. Elegans, Integripetala, and Pulchella are all very attractive.

CONVOLVULI.

All the convolvuli are free and continuous in blooming, and the varieties of C. minor are useful both in the mixed border and in beds. To have them in bloom early in the season sow the seed in boxes, and in due course prick the seedlings off into large sixties, putting two in each and plant out without separating them. The second row is the most suitable position for them in the border. The typical form, which has bright blue flowers, is the best, but the rose and white varieties are well worth growing.

ESCHSCHOLTIAS.

These are wonderfully showy, and afford a ready means for producing a bright display of color at a very small expenditure of either time or money. It is preferable to sow them where they are to bloom, and this may be done either in the autumn or spring, or at both seasons, as may be desired. Overcrowding, as in the case of other annuals, is inimical to success. The most desirable forms are Crocea alba, Crocea fl. pl., and Mandarin.

LINUMS.

All the linums are elegant in growth, and the majority are very showy. The best course of procedure is to sow the seed in boxes, then prick off the seedlings into large sixties, three in each, and transfer them to the borders without separating them. They appear to the greatest advantage in the second row. Azureum and Grandiflorum Coccineum can be the most strongly recommended.

NASTURTIUMS.

The varieties forming the Tom Thum group are admirably adapted for massing and all for brightning up the mixed border. They are especially useful on hot, dry soils, as they are well able to withstand the effects of both heat and drought. Highly satisfactory results are obtained by sowing in boxes under glass and picking off into three-inch pots, as advised for several other subjects. They ought also to be planted out without being separated. It is essential to success that the soil be rather poor and the position be fully exposed to the sun. King of the Tom Thumbs, Golden King, Empress of India, and Ruby King are all of the highest excellence.

NEMOPHILAS.

Like the candytufts the Nemophilas do not remain in bloom a sufficient length of time to justify their being grown otherwise than in limited numbers, but they are so attractive when in flower and so useful for the production of a display of color quickly, that they must not be overlooked. The seed ought to be sown in patches along the front of the border where the plants are to bloom, as they are too ephemeral to afford an adequate return for the labor involved in sowing under glass and then transplanting them to the border. The seed may be sown both in the autumn

FIG. 1386.—A FLOWER BORDER, AFTER CORNELL BULLETIN.

and spring with good results. The most effective of the several kinds is Insignis, but Atomaria and Maculata are well worth growing.

POPPIES.

The annual poppies are so readily raised in quantities and rich in color that they are perhaps, unsurpassed for the production of a brilliant display in the borders at a minimum of expense and labor. But, as they are ephemeral in character, it is not advisable to grow them in large quantities; the best course is to sow the seed in patches towards the back of the border, and to thin the seedlings sufficiently to enable them to attain their full development. When overcrowded, as is so generally the case, they come into bloom very quickly, and remain in good condition so short a time as to contribute but little to the attractions of the border. The Shirley strain is especially good and should have first attention, and the Carnation and Paeony-flowered types are well worth growing.

SCHIZANTHUS.

Less showy than some of the subjects, the schizanthi are remarkably attractive and are valuable for the variety they afford. It is a good practice in the culture of the annuals to sow the seed in large sixties under glass and to thin to three plants in each and transfer them to the borders without separating them. They appear to the greatest advantage

in the mixed border. The most suitable kinds for border culture are Grandiflorusoculatus, Papilionaceus pyramidalis, and Pinnatus.

ZINNIAS.

The zinnias have the great advantage of being free and continuous in flowering as well as showy in color, and may therefore be employed to great advantage both in beds and borders. To obtain strong plants by the end of May the seed should be sown at once in pans and be placed where it can have the assistance of a brisk temperature during the process of germination. As soon as the seedlings are of a suitable size they should be potted off singly or pricked off into boxes and be placed where they can be kept close and warm until established, when they must be gradually hardened off. The double and single varieties are equally attractive in the flower garden and the selection may therefore be left to individual taste. The type known as Robusta grandiflora plenissima is useful for the rows, and Haageana imbricata fl. pl. is well adapted for front lines.

FRANK BRUNTON.

Boston, Mass.

CATALPA.

FIG. 1387.—CATALPA.

SIR, — Apropos of your short article on the Catalpa in a recent No. of the HORTICULTURIST, I send you a photograph showing the foliage and flowers of this beautiful though not very hardy tree. The photograph well illustrates the large, heart-shaped leaves and showy flowers and panicles which may serve to make more clear to your readers the admirable description given in your journal.

The photograph was taken last summer from specimens cut from trees growing on the Experimental Farm, Ottawa.

Yours faithfully,

FRANK T. SHUTT.

Chemist, Experimental Farm.

A TRELLIS FOR THE CRIMSON RAMBLER.

SO many of our readers have selected this rose from our list this spring, that any information concerning it will be widely read. In all, we have sent out about 1,500 plants of the Crimson Rambler, and thus introduced this excellent novelty into nearly every part of Ontario. We noticed in Vick's Magazine a trellis for this and other climbing or half climbing roses, with note as follows :—

Besides training climbing roses on walls and about verandas and porches, as most frequently seen, and where they are displayed to fine advantage, they may also be put to other uses.

A low trellis may be made with posts and wire. The post can stand four feet above ground, and be furnished with three lengths of wire—one along the top, one about fifteen inches from the ground, and the other equally distant from the upper and lower one. If the posts are six feet apart, a strong plant of the Crimson Rambler will fully occupy three spaces between the posts, or eighteen feet in length with one or more canes to each wire. The wire should be about number twelve in size and be drawn tight and fastened to the posts by means of staples, in the same manner as grape trellises. The trellis can run along by a garden path and be of any desired length. Not only what are called the Rambler roses, but our hardy Baltimore Belle, Queen of the Prairie, and other hardy climbers, and at the South, the Ayrshire, Banksia, and the Noisette and Climbing Teas can be managed in the same way.

A LOW ROSE TRELLIS.
FIG. 1388.—

THE ROCK GARDEN.

TO those who have the requisite location, there are few more interesting features of out-door gardening than that styled the Rock Garden. I saw two of the best examples of artificial construction last summer that perhaps are to be seen, and it seemed to me that we might do more of it here. We are limited to a comparatively few plants in our climate; the exquisite Saxifrages of the European Alps, the Primulas, Androsaces, Ramondias, Cyclamens, and many of the plants they use abroad will not succeed here, and for that matter some of our choicest Rocky Mountain Alpines absolutely refuse to grow when brought from their high estate, but there are many that will succeed if given a little attention. A well-constructed garden of this sort has a most charming effect when the moss pinks, columbines, and various spring-flowering bulbs are in bloom. It is at all times advisable to see that the strong do not crowd out the weak, and in this kind of planting it is not possible to use the hoe, and seedlings are sure to appear in abundance, often to the exclusion of the choicest plants. This is true also of borders, and we find that in a short time the best larkspurs and phloxes seem to revert to original types, and columbines hybridize out of recognition; but it is all explained by the fact that seedlings are too numerous, and, until they bloom, have much the same appearance. I am inclined to think the Aquilegias are not strictly perennial; they flower for a year or two, and then disappear. I think this is true also to some extent with all plants that have not a tuberous or bulbous root. We all know how difficult it is to keep the true Rocky Mountain Columbine, or the Siberian *Aquilegia glandulosa;* this all means that we must have a reserve border, where a few plants can be isolated for seed, and the seedlings drawn on to fill up losses, or we can test some doubtful plant and propagate desirable ones There are many reasons which make a place of this description desirable that will occur to all.

Most hardy plants are easily raised from seed, and a seedling plant that is healthy, even though it has never bloomed, is preferable in the long run to any other; there is no serious check in transplanting, neither has it been weakened by flowering. The best time to sow seed would be as soon as gathered; but we usually have too much hot weather at that time, and it is best to wait until a cooler time in fall.—Mr. Orpet before Mass. Hort'l Society.

FIG. 1389—

A HYDRANGEA IN BLOOM.—I am sending you a photograph of a hydrangea which I have in bloom. It will show you the success of an amateur florist, and you may think it worthy of a place in your valuable magazine. — A Subscriber at Fergus.

PRUNING ROSES.

AN important operation connected with planting is pruning, which is better done immediately after being planted. A pruning shears is best for this purpose, as if a knife is used the plant is likely to be loosened in the soil. Only general instructions on this all-important operation can be given. Right here it is well to say that if any of the roots are bruised they should be cut away to the sound part, and if any are of immoderate length they should be shortened back before planting. The strength of a shoot will determine how far it should be cut back; if very strong, cut it back to four or five eyes from the main stem, if weak, to the second or third eye, and let the topmost eye be on the outside of the shoot wherever possible. If the branches are crowded and the shape of the plant necessitates it, drive in a sharp-pointed stake — not too large — and spread them by tying, or cut enough away to ensure against over-crowding as they grow. Those directions apply mainly to hybrid perpetual roses, the tea or monthly roses only require a shortening back of the main shoots, severe in the case of soft, immature wood, and less so on well ripened shoots, and the cutting completely away of all light spray wood, which will only produce foliage and no flowers. When the plants bloom and the flowers are cut off, either for use or after they fade, it is better to cut back to the second eye as they are more apt to flower again than if a greater portion of the flowering shoot was allowed to remain on the plant.

The distance at which to plant varies somewhat according to the class and variety; but as a general rule it is safe to say that the hybrid perpetuals may be planted eighteen to twenty inches apart, hybrid teas fourteen to sixteen inches and the tea or monthly roses twelve inches. The climbing roses, if planted on a trellis or fence, should be planted about six feet apart.—Gardening.

PRUNING HARDY SHRUBS.

HOW do you prune your hardy flowering shrubs? Some persons take the shears and clip the bushes to a perfectly rounded or oval form, something as they would prune a hedge, and then call the job well done. Others have a great fancy for tree-like forms in shrubs, and they cut with a view to developing a trunk to support the leafy head. Neither of these ways are to be recommended, where the object is handsome shrubs and a profusion of bloom. In the case of the majority of shrubs, to clip them in winter to a rounded form is to cut away just so much of the flowering branches, for the bloom appears on the young wood of the previous year. To aim for the tree form of shrubs, in most cases results unsatisfactory, for the reason that it is unnatural, and the trunks are almost sure to be too weak for the head, hence they will become crooked and ungainly. After a long experience with this valuable class of decorative material, the writer is convinced that by all odds the best way to trim is after a manner to preserve the natural characteristics of the shrubs. To do this, all of the older and unthrifty

wood may be thinned out at this season of the year, and the younger growth be headed back only a trifle. It is a good plan, then, immediately after the blooming season of the majority of kinds, to cut back the flowering wood; this will lead to a fine crop of young shoots later for the next season's bloom. A general exception should be noted in the case of such shrubs as do not bloom on the previous year's shoots, but on those that grow the same season. Among such are hardy hydrangeas, altheas, coronillas, burning bush, late-flowering spiræas and roses. All such should be severely pruned early in the spring, cutting back not only the past season's shoots to two buds each, but also cutting away enough of the old growth to leave the bush quite compact at the beginning of the season's growth.—Vick's Magazine.

GROWING FLOWERS IN VASES.

PRETTY, delicate vines give the bright, finishing effect to a collection of flowers that lace gives to draperies. The best place for these airy creepers and delicate drooping plants is in vases and hanging baskets These need not be expensive nor of elaborate designs to make lovely objects on the lawn or piazza. Boxes covered roughly with a rustic net-work of knots and twigs, or evenly with split rough-barked limbs put on in bold patterns are quite as handsome in their way, and much more suitable to ordinary surroundings, than marble or bronze vases. Dozens of charming designs suggest themselves as one works. Vines for out door vases should be delicate, but hardy. The Nasturtium, refusing to run in any methodical way, utterly ignoring the most temptingly drawn string, scorning the most elaborate lattice, escaping the most uncompromising woven wire and insisting upon rollicking about in the most unhampered manner, is just the thing for your vases. Here the roots can be kept damp and the beautiful leaves and gorgeous flowers wave and glow from early spring until severe frost. Another extremely pretty and less common vine is Thunbergia. The flowers run through the yellows and creams, but the colors are softer and the blossoms daintier. Many of them are delicate and pretty as Primroses. Both these vines are hardy annuals, coming easily from seeds, and furnishing many handsome flowers. Some varieties of Clematis are lovely for vases, and the tender Ivies do well if somewhat shaded. For the centres Heliotrope and Fuchsias are better than Geraniums, even in hot sunshine. But if an annual is desired, nothing equals the Petunia. It blooms constantly, is of half trailing habit, is hardy and always beautiful. Petunias grow much better in vases than in beds. Like most annuals they are hungry and like rich food.—Parks' Floral Magazine.

ALYSSUM *saxatile compactum* yields a mass of golden yellow flowers, and, like the arabis can be used with the spring flowering bulbs either for an edging or planted in a mass, allowing the bulbs to come up all through it; the effect will be very pleasing. Sow it now (July). —Gardening.

The Canadian Horticulturist

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

Notes and Comments.

A CONSIDERABLE CHANGE seems to be coming over our fruit prospects this season. The leaf-curl is taking half the peach crop, a blight is affecting the apples where the load was over heavy, and a large portion are dropping. The Greenings, the Cranberry Pippins, and the Astracans seem to be suffering considerably in this way, especially on a soil that was well cultivated last season. Evidently vigor of growth helps to hold the fruit, and since this is promoted by both manure and cultivation it is evident that these are both essential to the best success.

MR. W. T. CRANDALL, the agent for the Dominion in Great Britain, visited Grimsby recently, and gave the fruit growers a full account of his work in Great Britain, placing our fruit on the Glasgow and London markets. He said there was no difficulty in selling unlimited quantities of our finest fruits; they would find quick sale at highest prices. The great point was to compete with French and California fruit in point of packing, and to put up only the finest grades.

MR. GRINDLEY called at Grimsby on the 4th June. He has just received an appointment from the Department of Agriculture to go to Great Britain in July, in order to work up a demand in various towns for Canadian food products. He has also instructions to look after dairy and poultry interests. Mr. Grindley is an energetic young man, who has had considerable business experience, and will no doubt accomplish a good deal in our interests.

LABELS.—Strips of zinc make excel-

sent durable labels for recording the names of varieties of fruit trees planted in the orchard. We usually have them cut 5 or 6 inches long and about ⅜ to ½ inch broad. They can then be wound about a limb in such a way as to give with the growth, and thus be harmless. Often we fasten a zinc tag to the trunk of a tree with a wire nail.

INK FOR WRITING ON ZINC LABELS.—A good formula for writing on zinc labels is made as follows:—

Copper Sulphate....	1 oz.
Lampblack	½ oz.
Rainwater	½ pint.

Mr. G. C. Caston writes that he is using this formula, and is much pleased with it. We find an ordinary led pencil makes an indelible mark on the zinc labels, if they are first allowed to corrode a little, and is more convenient than ink.

MR. H. H. GROFF, of Simcoe, who was doing such good work in horticultural lines, in hibridizing Gladioli and Cannas, and whose new creations were taking a front place in the estimation of gardeners, has accepted the position of Manager of the Molson's bank of that town, and is succeeded in his special lines of bulb raising, by J. A. Campbell, of Simcoe. We regret that so promising an originator of novelties should have been thus tempted away from the care of his floral treasures.

SPRAYING with Bordeaux mixture (4 lbs. sulphate copper, 4lbs. lime, 40 gallons water), seems to be a general panacea for fungous diseases of plants generally, such as mildew of grapes, rot of plum and cherry, leaf blight of strawberry and tomato, and even for tomato rot. This latter, however, does not yield very easily to treatment, and it is best to choose such varieties for planting as are least liable to the fungus.

KEROSENE EMULSION is the cure all for such insects as plant lice, mealybug, red spider, thrip, and scale insects of all kinds—but for the latter a strong solution is necessary. The formula is ½lb. hard soap; 1 gallon boiling water; make strong soap-suds with soft water, and add, kerosene, 2 gallons while boiling stir well and an excellent emulsion will be formed. Dilute 4 to 25 times with water, before applying. Pumps are now being made with kerosene attachment which mingle the kerosene with the water in the spray, and thus save the trouble of making the emulsion. The writer believes, from his experience, that if a *sufficiently fine spray of kerosene* can be made, no dilution with water is necessary.

WOOD ASHES have been recommended by some as a preventive of apple scab, but it has been found by experiments at the N. Y. Station, that ashes applied to the soil have no value in this direction.

FOR ROSES affected with the rose aphis and thrips, we have been applying an exceedingly fine spray of pure kerosene oil applied with a large tin atomizer known as the Mitchell hand-sprayer. So far we have not observed the least evil effects upon the bushes, while the pests have disappeared like magic.

MR. ALEX. VEITCH, the gardener at the Gore, see June, 1897, says he has resigned his position, and is open for an engagement. His address is Orchard House, Hamilton.

THE GREATER BRITAIN EXHIBITION OF 1899.—We have received a letter from the authorities of the London Exhibitions, Limited, to be held in Earl's

Court, from May to October, 1899. This letter points out the small amount of space at the Paris Exposition, that will be at the disposal of the British colonies, viz., 60,000 square feet; and the cost of this space, which will be 10/ per square foot.

"Under these considerations," says the letter, "a proposal has been made to the Premier of your Colony, that he should be officially represented at the Earl's Court Exhibition, where its wealth, resources and manufactures would be brought before the public of the United Kingdom."

This matter is under the consideration of the Hon. Sidney Fisher, who is presently to visit England, and will inquire into it fully, as well as into other questions of vital importance to the export trade of Canada's fruit product.

GRAFTING.—A subscriber asks if the ends of the scions should be waxed, when grafted. This we never do ourselves, and yet meet with very good success. Mr. W. T. Macoun, Horticulturist, Ottawa, says: "We have not found it actually necessary to do this here, but find that the scions sometimes split back to the first bud if this is not done, so that as a general rule it is best to wax."

HERSEE'S STRAWBERRY is a fine size, but samples which came to hand, June 13, were over-ripe for sampling. Mr. Hersee writes: "This berry was ripe last year, June 5th." He claims for it productiveness, good flavor, and uniformity of shape, in addition to coolness.

MR. E. B. STEVENSON'S strawberry experiments are being continued with much interest on his part, and much to the public advantage. Some of his hybrids, especially B. No. 3, are enormous in size. The writer and assistant visited his experiment plots on the 15th of June, and secured excellent photos of the following varieties:—Carrie, Glen Mary, Margaret, Wm. Belt, Ridgeway, Hall's Favorite, Seaford, Geisler, Mastodon, Greenville, Tennessee, Bubach, Nick Ohmer, Van Deman.

APPLE SCAB.—The scab has suddenly appeared (June 16), upon the apples, in a severe form. The Department has sent out a circular warning the public of the great danger to their orchards if spraying is neglected.

THE LARCH SAWFLY.—On visiting Guelph on the 24th of June, we were surprised at the brown and dead appearance of the grove of larches across the road in front of the College, until we learned from Prof. Hutt that it was being devastated by a new enemy, in this section, viz., *Nematus Ericsoni*, the larch sawfly. So suddenly had this appeared, and so quickly had it stripped the trees, that the mischief was done before its presence was detected. Mr. W. M. Orr, reports a similar worm affecting the native spruce on the mountain above Stoney Creek. It strips the trees bare of foliage, as a fire would do, and that very quickly. Evidently we must fight or give up to the worm.

A GOOD RECORD.—Mr. Fred. A. Saunders, youngest son of Dr. Wm. Saunders of Ottawa, an honor graduate in science of Toronto University, has recently been awarded a scholarship in Physics at John Hopkins University, Baltimore. Now he has won the fellowship for 1898 to '99, the highest acknowledgment of merit in the gift of the University.

THE Gardeners' Chronicle announces that Mr. Fetisoff, an amateur horticulturist at Voronezh, Russia, has achieved what was believed to be impossible, the production of jet black roses. No details of the process have been received.

⁂ Doings of Other Societies. ⁂

Out-Door Meeting of Hamilton Horticultural Society.

By invitation of the president, Mr. A. Alexander, the Hamilton Horticultural Society held its monthly meeting at his residence, No. 182, Wentworth St., South, on the evening of Monday, June 6th.

The members turned out in force, an unusually large number of ladies being present.

The earlier part of the evening was spent in inspecting the floral display on the beautiful lawn and in the conservatory. Among the out-door plants Hemerocalis flava, Cypripedium pubescens, Plumbagos, Cannas, Henchera sanguinea, Phloxes, Deutzias, Viburnums and Wigelias were very fine. The Aquilegias, chrysantha, caerulea, and Long spurred hybrids were especially admired.

In the conservatory the begonias attracted much attention, President Carnot and rubra being especially grand. A magnificent Bougainvillia, covered with flowers, had climbed a fourteen-foot pillar, and, failing to push through the glass, hung down in long festoons.

When darkness had risen so high as to veil the open air beauties from sight, the members assembled in the spacious verandah.

President Alexander in formally opening the meeting, welcomed his guests and expressed his pleasure at their presence. He said, "Many little and seemingly trival things go far in making floriculture successful." As an instance, he remarked, that all bloom should be cut from plants as soon as faded so that the strength would not be wasted in maturing seed. Bulbs so treated increased in vigor and size and many spring bloomers produced a second crop of flowers. He then introduced Dr. Beadle of Toronto, who gave an interesting address, the spirit of which stamped him as an ardent lover of nature. The Doctor said that he was pleased to meet the members on this his first visit. The large attendance, deep interest, and friendly feeling being very gratifying.

He thought that flowers must have been created expressly for human beings. Some years ago the theory, that floral displays were only intended to attract insects, was advanced and many articles had been written in support of this idea, the usually light colored night bloomers being supposed to be especially designed to attract moths, but it had been proved that insects found the nectar, etc., just as readily when the bright colored petals and sepals were removed. They needed no colors to direct them to the treasures that they sought. Then why are the wild flowers so arrayed? nobody planted them thus. They sometimes bloom almost unseen, beautiful beds of anemones, ranunculi, cardinal lobelias, habenarias, etc. The great Creator has made them to gratify our tastes and intelligence. Nature is an expression of the Maker.

Many wildlings can be grown with success. In his garden he had Cypripedium spectabile, pubescens and parviflorum, Habenaria bracteata, onoclea, struthiopteris and many other native plants and he would have more if he had the ground. Begin with simple forms. Experiments are valuable and interesting. Cultivation or preservation is necessary to prevent extermination of many rare plants. The very rare orchid, Epipactis Helleborine, was plentiful in the neighborhood of Toronto a few years ago, but cows had been turned into the grounds and now scarcely a plant could be found.

In answer to questions the Doctor said, "Peach curl is now being experimented on, but it is too early to state results. Sulphate of copper is the best fungicide for fruit trees and potassium sulphide for gooseberries. The growth of leaf fungi was described. Mulching in Winter does not retard the early growth of peaches. Specimens of a plum pest submitted by Rev. M. McLaren was said to be a scale but *not* the San Jose variety. An alkaline wash applied at the proper time would probably destroy these insects and kerosene oil had been used with success during the winter. Eggs on a grape leaf, collected by Mr. Ogilvie, were probably deposited by a leaf hopper. The habits of scales and borers were described and the speaker hoped that some person would find and work out the life history of an insect destroying scarlet flowered thorns in Hamilton.

At the close of the discourse the sincere thanks of the assemblage were tendered Dr. Beadle for his very instructive and entertaining talk.

After the Doctor's reply B. E. and Mrs. Charlton invited the Society to hold its next meeting at Boulder Wood, their summer residence on the mountain brow.

Mr. W. M. Robson, of Lindsay, writes that at a recent meeting of the Lindsay Horticultural Society, it was decided to use every means of destroying the tent caterpillar. Mr. Robson says:—

"In our opinion nothing would be so effective as the action of Government in enforcing under penalty the entire destruction, (in the earliest stages), of the Tent and Forest Caterpillar, wherever found, on public or private, the cutting down and destroying of that species of wild cherry, commonly known as choke cherry, which is frequently found in neglected fence corners, and is known to be favorable for harboring and propagating these pests. We hope these suggestions may meet

the approval and assistance of sister societies, leading to a united effort to memorialize Government to add these clauses (by way of amendment or rider) to the Black Knot (or similar) Act, which could be enforced by the same inspector, during these periodical scourges.

Flower Exhibit at Grimsby.

FIG. 1390.—LARKSPURS FROM WEBSTER BROS.

On invitation of the Secretary of the Fruit Grower's Association tion of Ontario, a united meeting of the Hamilton and Grimsby Horticultural Societies was held at Maplehurst on Monday evening, the 20th of June. If not as large as sometimes seen, the rose exhibit was very superior in quality, and called forth many words of praise. Mrs. Jno. Knox, of Hamilton, contributed a large and magnificent basket of roses, and Messrs. Ogilvie, Evel, Anderson, Webster Bros., Burton, and Dr. Russell. showed fine samples of roses. These gentlemen were all from Hamilton. Mr. Anderson's sweet peas were of great interest (being grown from seed sown last fall). The following is a partial list of the Grimsby exhibitors: Mrs. Palmer, Roses, poppies, sweet peas; Mrs. Henry Smith, pampas, ribbon grass and roses; Miss Millard, fine samples of Margaret Dickson and other roses; Mrs. Adolphus Pettit, and Mr. A. Terryberry, fine samples of Paul Neyron and other roses; A. Cole, sweet peas, window boxes, lobelia, etc.; L. Woolverton, Luizet, Washington, Bonstetter and other roses; Russian Salvias, Schizanthus, Canterbury Bells, etc.

Messrs. Stone & Wellington, of Fonthill, sent large named collection of handsome roses, from their ten acres of rose plants, which added much to the variety of the exhibit. Mr. A. Alexander's fox gloves and larkspurs were the centre of attraction; as also a fine collection of harebells, Larkspurs and peonies from Webster Bros., shown in Fig. 1390.

The sociality of the occasion was of marked interest until about nine o'clock, when the guests were entertained by music and addresses. Mrs. F. Unwin, of Grimsby, who is already favorably known to the Fruit Grower's Association, sang a solo, and Misses Brodie and Metcalfe gave a charming violin duet. The address of the evening was given by Mr. A. Alexander, President of the Hamilton Society, who not only aimed at interesting all in his favorite pursuit, but also gave many practical cultural hints.

The meeting was such a success, that we hope it will not be the last one of the kind.

FIG. 1391.—POPPIES FROM MRS E. J. PALMER.

THE WOODSTOCK HORTICULTURAL SOCIETY decided, at their last monthly meeting, to hold a fruit and flower show on the 4th and 5th of August, in the Curling Rink, with an admission fee of 10 cents. Committees were appointed on Decorations, on Exhibits, on Arrangements, etc., and a most enjoyable season is anticipated.

THE GRIMSBY HORTICULTURAL SOCIETY does not propose to hold another exhibit until the November Chrysanthemum show, because of the busy fruit season now coming on.

MONTHLY evening meetings of the Horticultural Societies, with a table of seasonable floral exhibits, seem to be very desirable. At each meeting a single paper is read and discussed. Invitations to hold lawn meetings in the summer season are well worth accepting. One of those meetings was held at "Boulder Wood," Hamilton, the residence of Mr. and Mrs. John Charlton, on Monday evening, June 27th, from 7 to 10.

Question Drawer.

We shall be glad to answer all questions relative to Horticulture, Floriculture, and Forestry, in these columns, but cannot undertake to send answers to such questions by mail.

Yarrow.

1012.—Sir,—Please tell me the name of the enclosed weed. It is just appearing on my farm. Is it a dangerous pest?

A. Cameron, Tiverton.

Reply by Dr. Fletcher, Central Experimental Farm, Ottawa.

The weed sent by Mr. Cameron is the well-known yarrow (Achillea Millefolium). The weed grows in pastures and way-sides in every part of Canada from the Atlantic to the Pacific. It can hardly be called a dangerous pest, because it is a plant used in the Old Country to mix with pasture especially for sheep runs. Our Canadian sheep, however, do not seem to relish it, for it is almost invariably left when there is anything else left for them to eat.

Dandelions and Ants in Lawn.

1013.—1st. Sir,—My lawn is near a field where dandelions grow most abundantly. I have so far succeeded by continued digging in keeping it almost free from them. But I find that it damages the lawn very much. Is there any other way to fight them? Would a salt water, lime water, or lye water applied carefully do less harm than digging? I prefer no lawn at all to a dandelion bed.

2nd. How can I get ants out of my lawn? Hoping for an early reply to the above and success to the Horticulturist.

A. B. Carman, *Iroquois.*

Reply by Dr. Fletcher, Ottawa.

In reply to the question one, to the best way of clearing a lawn of dandelions, I know of no other way than spudding the plants. This need not, however, destroy the appearance of the lawn very much if a proper instrument is used, such as a gouge at the end of a handle, which can be thrust down some depth into the soil, so as to cut off the tap root of the dandelion, when the plant can be withdrawn without disturbing the grass very much. This year is a most remarkable one for the abundance of dandelions. How this phenomenon can be explained I know not, for the dandelion is an extremely vigorous and resistant perennial. I have cut up the root stock into half a dozen pieces and planted these at various depths, from 1 inch to 6 inches, and vertically and horizontally, and have found that all of the pieces grew, and those which were placed horizontally in the ground grew at both ends. However, notwithstanding this, many lawns have been cleaned entirely by persistent work in spudding out the plants, as suggested above.

Question No. 2. "How can I get ants out of my lawn? Probably the best way of getting ants out of a lawn is to pour a small quantity—about one teaspoonful—of bisulphide of carbon into the centre of the nests and then close the orifice by placing some earth over it and pressing down with the foot; at the same time, a lawn which is badly infested with ants generally requires fertilizing and watering, so that if water is available it is well to water the lawn as frequently as possible, and at the same time top-dress it with a small quantity of some special fertilizer, so as to help the plants and make them grow vigorously.

Hibiscus Subviolaceus.

1014. Sir,—Would you please describe the following plants, with hints about their

cultivation, viz., *Hibiscus subviolaceus* and *Pilea serpaefolia*.

GEO. WOOD, Erasmus.

Hibiscus violaceus is one of the cultivated varieties of the well known *althaea frutex*, or *Hibiscus syriacus* of Botanists, introduced from Syria in 1896. It is a hardy deciduous shrub of the hollyhock family, and in the latter part of the summer is one of the finest of lawn shrubs, with large showy flowers, single and double flowers.

Pilea serpaefolia is another name for *Pilea mycrophylla*, a small leaved Pilea, the Artillery or Pistol plant of South America, a species of the Nettle family *(Urticaceae)* named from the explosive discharge of the pollen from the anthers.

The Tent Caterpillar.

1015. SIR,—Is there any law compelling persons to spray fruit trees for the destruction of Tent caterpillars? I have fought the pest for years, but others have let them go, and as a result I have had terrible work this year. These caterpillars were never so destructive in this part of the country as this year. Wild cherry trees seem to be the natural breeding places of the pests, and ought all to be cut down. Can the Ontario Fruit Growers' Association do anything in the matter?

WM. GORSLINE,
Secy. Durham Horticultural Society.

Our Association can and will use its influence with the Government to have something done to aid in the destruction of this pest. It is certainly not fair that those who, like Mr. Gorsline, are using every endeavor to keep their orchards clear of insects should have them overrun by those from their neighbors' orchards. Indeed, the reports from the Lake Huron district indicate that the tent caterpillar is so numerous as to constitute a public plague, in some instances even to stop the railway trains.

We have already acts providing for the destruction of noxious weeds, fungous diseases and certain insects, and we see no reason why a section may not be added to one of these making it a penal offense for any orchardist to allow the tent caterpillar to breed in his orchard, and thus endanger the orchards of his neighbors. Mr. Saunders in his "Insects injurious to fruits," says 'Governments might well enforce under penalties the destruction of these (tent) caterpillars, as their nests are so conspicuous that there can be no excuse for neglecting to destroy them, and it is unfair that a careful and vigilant fruit grower should be compelled to suffer from year to year from the neglect of a careless or indolent neighbor." We think this a subject worthy of the attention of our Association at its next Annual meeting.

The extent of the evil is reported as follows by The Sun :—

From different sections of the Province come reports of a plague of caterpillars. They stopped two trains near Ottawa last week, and forced, as reported lower down, the postponement of a picnic near Dunvegan. Now comes the report that the insects are swarming about Owen Sound. On the grade that extends outside of Owen Sound for 25 miles the rails have become so greasy from the crushing of the insects by the car wheels, that long freight trains have to be cut in two in order to permit of the engines hauling them.

The people about Dunvegan, Ont., had arranged for a picnic at McGillivray's Grove, but before the day for the picnic arrived a plague of caterpillars took possession of the bush and forced the abandonment of the outing arranged for.

The Toronto Globe calls attention to the birds as insect destroyers and the importance of their protection as follows :—

The reports from northern districts of the Province in regard to a plague of caterpillars and the temporary stoppage of C. P. R. trains as a result of crushing myriads of the pests on the rails should induce all who have any authority to strictly enforce the provisions of the law for the protection of insectivorous birds. The only effective means of fighting insect pests is by sparing their natural enemy. If school teachers and school inspectors would warn their pupils against robbing birds'

nests of eggs or destroying the young and at the same time point out how useful the birds are as an ally of the farmer they would do the community an important service. Certain privileges for the collection of birds' eggs for strictly scientific objects may be secured through the Game Wardens, but it is unlawful to have in one's possession, without such a permit, either the eggs or young of any bird save eagles, hawks, owls, wild pigeons, blackbirds, kingfishers, crows, ravens, jays and sparrows.

But why should lazy people allow nests of these worms to increase in their orchards, and crawl over into their neighbors' orchards, when a day or two of hunting or spraying would destroy them, much more effectually than the birds.

To Destroy Ants.

1016. SIR,—Please give me some remedy for destroying the ants in my garden.

L. R. HAGERMAN, *Port Hope.*

I have never seen any injury by ants, except for the trouble they give in throwing up hills of dry sand on lawns and in flower borders. If your insects really are ants, they can be destroyed easily by procuring a small quantity of bisulphide of carbon and pouring about a teaspoonful of this liquid into the centre of the nest, and then covering up the hole with a little earth and pressing it down with the foot.

J. FLETCHER.

Peach Aphis, Pear Slug, Etc.

1017. SIR,—What would you recommend for the fly on the black currant bush, also for the slug on the pear tree. And the worm that curls itself in the leaves of the peach tree, and oblige,

JAS. MUIR,
Hamilton, Ont.

Reply by W. T. Macoun, Horticulturist, Central Experimental Farm.

Regarding the hard maple trees which your correspondent finds are dying: I may say that it is very difficult to state positively what kills the trees, unless one saw a sample. There are, however, several causes why these trees die. One of these is from the depredations of a borer which works under the bark; another is that in cities where there is an escape of gas from the mains the trees are often very seriously affected. Of late years, also, since the asphalting of streets and the laying down of granolithick sidewalks, trees have, apparently, suffered to a large extent on account of thus being deprived of a large amount of their food, air and moisture, and any trees which have a large top to support are in consequence often rendered sickly, and eventually die. The hard maple is, as a rule, a very healthy tree and is not often affected, under ordinary conditions, in the manner described. It frequently happens, also, that apparently a blight strikes certain trees, and it is, I think, in these cases impossible to save them.

W. T. MACOUN,
Horticulturist.

What Kills the Maples?

1018. SIR,—I have a very fine row of maple trees which have been planted about eighteen years, and which have grown splendidly, being in the very best of condition till about two years ago, when one died. Last summer I lost four and this spring about a dozen more are affected. The first indication of disease is young twigs dying, especially at the ends of the limbs and in one season the tree dies. The bark seems to loosen from the whole body of the tree. I have been unable to find out the cause. If any of your many readers have had a like experience I would gladly accept any information from them. I have ash and soft maples in the same row and these are not affected. As I have a large number of maples I am very anxious about them, for I fear I shall lose them all.

THOS. MACKLEM.
Hamilton, Ont.

Reply by Prof. Fletcher, Ottawa.

The fly on the black currant bush which you complain of is probably the Currant Plant louse. The best remedy for this is to spray the bushes, particu-

larly under the leaves, with whale-oil soap—one pound in eight gallons of water; but, as a matter of fact this insect very seldom does harm to the black currants, owing to the fact that the natural parasites—the Lady-bird beetles—generally increase so much that they clean out the lice before they have injured the bushes.

The best remedy for the Pear Slug is undoubtedly to spray the trees with Paris green, 1 pound in 200 gallons of water, directly the slugs are observed.

The worm that curls itself up in the leaves of the peach tree is probably the caterpillar of the Eye-spotted Bud-moth, a very difficult insect to treat. The remedy which has given the best results is to spray the trees with Paris green 1 pound, freshly slaked lime 1 pound, and water 250 gallons. If you spray your peach trees with Bordeaux mixture to prevent the fruit rot, you may add the Paris green to the Bordeaux mixture in the same proportion as above, 1 pound in 250 gallons.

J. FLETCHER.

Rosa Rubifolia.

1019. SIR,—Can you, through the Horticultural journal, inform me and perhaps others how the Rosa rubifolia should be treated to make it blossom. I have been cultivating one since 1893, which has shown no signs of blossoming yet, although in canes it has made vigorous growth. If it is a climber, perhaps I have been treating it wrong, in cutting back the canes. I have also a Caragana or Siberian Pea Tree, received in 1894, and said to bear yellow blossoms, but it has never blossomed. The tree is now about five feet high. Also the Kosteletzkya virginica, a flowering shrub, said to blossom the first year from seed; I have had it growing for four years, and it is now about six feet high but no blossom has appeared. It being a southern production, perhaps the Canadian climate does not favor its blossoming; yet it appears to be hardy enough to stand the cold of our winters if protected. I have not seen it mentioned in any Canadian catalogue. It is said to be a genus described by Linnæus, and long since lost, for many years botanists searched for it. About six years ago a writer in the Botanical Bulletin, again called the attention of the botanical collectors to it, suggesting it might be found in the region of the original discovery. Acting upon this suggestion, Mr. Frank L Bassett, made a special journey to the locality, and after a long and weary search, was rewarded for his enterprise, toil and energy, by re-discovering it. Perhaps some reader of the CANADIAN HORTICULTURIST may be able to report better success with it. I venture to suggest that the Horticultural journal in the April number of each year give some information for the benefit of amateurs how to cultivate the various plants and trees sent to subscribers, with regard to soil, sunlight, shade, etc., for I have known some persons who were in the habit of watering all plants alike, giving the same quantity to a cactus as to an oleander and then wondering what was the matter with the cactus.

A. WILLIAMSON,
Kingston.

L. Woolveeton, M. A., Secretary Horticultural Journal.

In reply we would advise our correspondent not to cut back Rosa rubifolia as he does the hybrid perpetuals, as it is not so vigorous a grower. Its habit is rather that of the Sweet Briar, and its bloom is single like the latter. This rose is grown more on account of its red foliage than for its flower which is not conspicuous.

The Caragana should begin blooming now. On the 25th June we saw specimens in bloom at Guelph, which were probably not much older than the tree mentioned by our correspondent.

Open Letters.

Fruits Not Barred Out.

SIR,—In an article in your late issue under the heading "Fruit Not Barred Out," we are informed that the Minister of Agriculture declines to prohibit the importation of fruit from the United States on the ground that "Manitoba would be deprived of such luxuries as shipping to Manitoba from Ontario or British Columbia would be impracticable, at the same time Manitoba must depend on California for her fresh fruits." Now I think a more silly argument could not be advanced on any subject. Is not California a greater distance from Manitoba than either Ontario or British Columbia. And further, they not only ship from California to Manitoba but California fruit is shipped to Montreal and even to England and that during periods when our fruits are rotting in the orchards for want of a market. The fact is California cuts us out of the markets of our own country with fruit not nearly in quality to our own simply because they can put them in the market before ours are ripe and then receives a better price than we would be thankful for.

From the fact that there is more danger of scale and disease being brought into the country through importation of fruit than through the importation of trees, I am convinced that the prohibition of trees by the Minister of Agriculture is for the purpose of benefitting nursery men rather than for stamping out the scale.

S. MORNINGSTAR, *Goderich.*

Notes From Simcoe County.

SIR,—All the experimental stock has come through the winter in good shape, and a number of the trees are showing considerable bloom, so if no heavy frosts or other mishap occurs, we will have quite a variety of fruits this year. The following varieties are now in full bloom May 20th. Plums, Early Botan, Moldavka, Guei, Hudson River, Black Diamond, Union Purple. Cherries, Ostheim Russian, 207. The Russian Apricot Alexis is now in full bloom also.

Ten other varieties of plums and about the same of cherries are showing bloom.

The Princess Louise Apple, three years planted, is full of bloom.

As to the general outlook for fruit at present Winter Apples are with few exceptions showing a moderate amount of bloom. Early apples are very full. All kinds of stone fruits show immense quantity of bloom.

I used the full Bordeaux mixture this spring for first spraying when buds were swelling, and I think it is all right for the first as well as the second. I sprayed trees both young and old, currants and raspberries. It pays to spray young trees as well as those of bearing age.

G. C. CASTON.

The Barry Pear.

SIR,—By express I have sent you to-day three good specimens of the Patrick Barry Pear, grown in California. They were shipped here last fall and have been in a uniform temperature of 35 degrees. I could have sent you some of this variety *fully one-third larger*, but they were badly packed and had discolored in spots.

This pear is a wonderful keeper. I never have found one of them decayed at the core. It is best when it is little more than a sack of juice. Its size, shape and rich orange russet color when ripe, combined with its superb refreshing, sub-acid flavor and keeping qualities, entitles it to high rank among pears. The dealer of whom I bought them is selling them at the corner of Wall and William street at 10 cents each, or three for 25 cents. On the same fruit stand, were *extra fine* navel oranges from California, selling at six for 25 cents, and six extra fine bananas for ten cents.

This pear, can be shipped if carefully selected and packed, from Ontario to any market in the world, and delivered in prime condition. We have visiting us at this time some friends from Berlin, Germany. They tell us that good fruit is rare there, and *very expensive*. It is a very wealthy city, and if the Ontario fruit growers will unite and erect there a cold storage warehouse, and establish an agency for the distribution of their fruit through other German cities, they will find a larger market than they now anticipate. Fruit can be sent there in the fall, placed in cold storage, and taken out and exposed for sale at pleasure; success will surely be attained, if brain, skill and integrity are united in production and distribution. What has been accomplished by Ontario cheese-makers can be attained by Ontario fruit growers. Prime cheese opened its own market, and prime fruit will do likewise. *Quality! quality!! quality!!!* Carefully selected and packed, will overcome all obstacles.

FRANCIS WAYLAND GLEN.

Brooklyn.

Beet Sugar.

SIR,—Since writing you upon the beet sugar industry, the Secretary of Agriculture at Washington has made a report which contains information valuable to your readers, if they are interested in this rapidly-growing industry.

In 1897 there were nine beet sugar manufactories in operation in the United States. They produced 90,491,670 pounds of sugar from beets raised upon 42,272 acres of land. It will be observed that the yield of sugar per acre averaged 2,140 pounds.

There will be eight more manufactories

n operation this year, and the estimated product of sugar is 180,000,000, or an increase of 100 % over 1897.

In respect to physical conditions affecting the growth of the sugar beet in this country, the Secretary says that the best results were reported from New York and Michigan.

This official statement justifies my assertion, that the sugar beet can be successfully produced in Ontario, for conversion into sugar.

The manufactory at Rome, New York, produced first-class granulated sugar, and another manufactory will be in operation in the State this fall. The season is later at Rome this spring than at London or Goderich, and closes earlier in the autumn.

Favorable reports have been received from Wisconsin, Minnesota and South Dakota. It is found that the belt of territory included between the limits of the isotherms of 71 and 69 degrees may be regarded as the basis belt of the beet sugar industry. The best results are obtained within, or north of this belt, other climatic conditions being favorable. The extreme northern limits of beet sugar culture are determined only by the advent of freezing weather. This is important information for Canadian agriculturists.

FRANCIS WAYLAND GLEN.

Brooklyn.

Our Book Table.

BRUNTON'S HARDY PLANT CLUB AND INTERNATIONAL EXCHANGE, under the special care of Mr. Frank Brunton, importer and exporter of Nursery and Florist's stock, member Boston Horticultural Society, 136 Boylston Street, Boston, Mass.

YEAR BOOK OF THE DEPARTMENT OF AGRICULTURE, for the United States, 1897.

REPORT OF THE EXPERIMENTAL FARMS OF CANADA, 1897. Wm. Saunders, LL. D., Ottawa, director.

GREENHOUSE MANAGEMENT.—A manual for florists and flower lovers, on the forcing of flowers, vegetables and fruits in greenhouses, and the propagation and care of house plants, by L. R. Taft, professor of horticulture and landscape gardening, Michigan agricultural college, and author of Greenhouse Construction. Illustrated. 12mo, 400 pp, cloth. Price $1.50 postpaid, Orange Judd company, New York.

This new work just published forms a companion or supplementary volume to Greenhouse Construction." by the same author, although each of these books is complete in itself. The author has had unusual facilities for studying this entire subject practically as well as scientifically, and has here given the results not only of his own experience, but also those of many of the most skillful experts in their respective specialties.

It treats of all the plants commonly cultivated by florists and amateurs, and explains in a thorough manner the methods that have been found most successful in growing them. Particular attention is paid to the growing of cut flowers, entire chapters being devoted to each of the leading crops, such as roses, carnations, chrysanthemums, violets, bulbs, smilax, ferns, orchids, etc.

The growing of fruit under glass is attracting the attention of commercial florists as well as amateurs, and the reader will find separate chapters devoted to the forcing of grapes, strawberries, peaches and other fruits. The forcing of vegetables also receives the attention it deserves, and the raising of lettuce, radishes, cucumbers, tomatoes, mushrooms, etc., is explained at length.

The care of house plants is also treated quite fully, with detailed directions for propagating, preparing the soil, potting, watering and every part of their proper management. A chapter is also given on bedding plants, as well as on ornamental grasses, flowering and foliage plants. Other chapters are devoted to the propagation of plants from seeds, cuttings, layers and by grafting and budding. Of special value to many will be the directions for treating plants when attacked by insects and fungi. The preparation of the soil, the use of various manures, composts and fertilizers, watering, ventilating, heating, and in fact every detail of the subject to which the work is devoted, receives careful and minute attention.

MEEHANS' MONTHLY, devoted to General Gardening and Wild Flowers. Published by Thomas Meehan & Sons, Germantown, Phila., Pa. Price, $2.00 per year; $1.00 for six months in advance. Conducted by Thomas Meehan, formerly Editor of the "Gardeners' Monthly" and the "Native Flowers and Ferns of the United States." Vice-President of the Academy of Natural Sciences, and Botanist to the Penn. State Board of Agriculture.

A feature that in itself makes the work a standard authority, is the series of colored lithographs, illustrating some native flower or fern, one of which is presented with each issue, and which are executed in the most expert and artistic manner by Prang, the famous art publisher. A text of two pages, of descriptive and historical compositions, accompanies each. This series is practically a continuation of the famous work commenced in the "Native Flowers and Ferns of the United States," which was discontinued at the death of the publisher, after 192 plates were issued.

Write *Thomas Meehan & Sons, Germantown, Philadelphia,* for a sample copy.

A MODEL COUNTRY ROAD.

THE
CANADIAN HORTICULTURIST.

VOL. XXI. TORONTO, 1898. AUGUST. No. 8

BETTER ROADS WANTED.

IF any class of men in Ontario are interested in good roads, it is the fruit growers, who have the most tender of all products to carry over them. The spring wagon is an excellent aid, but, even with springs, over-ripe peaches and pears and berries are often half ruined by rough roads before ever they reach the railway station, and it is no wonder that in such cases the returns are so much less than were anticipated. We are making every effort toward better packing and better selecting, but all this will be fruitless without good roads over which to carry our perishable goods.

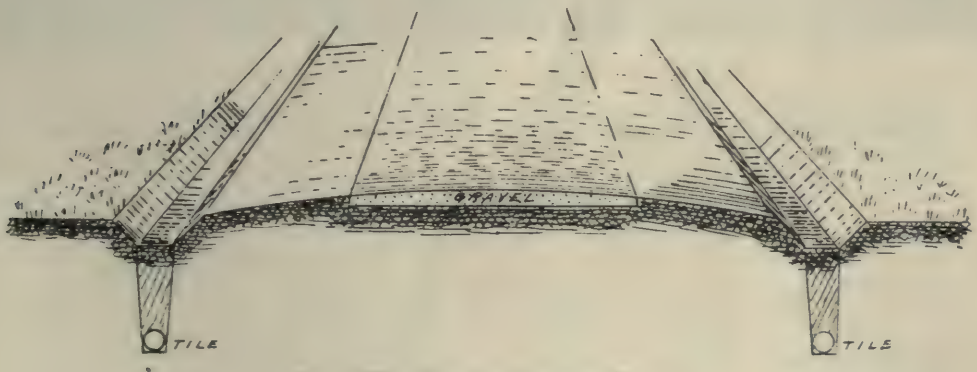

FIG. 1392.—PLAN OF COUNTRY ROAD.

In the words of Mr. A. W. Campbell, Provincial Instructor Roadmaking, we ask :

Do we actually want good roads? Or are bad roads preferable? Is the cry that has been raised throughout the length and breadth of Canada and of this continent : "We want good roads," the demand of men in their sober senses? Or has labor and money been placed on our roads for a century past merely to fill in time, and keep our surplus capital in circulation. If we do not want good roads, if bad roads are preferable, why should we want roads at all?

FIG. 1393.—A COUNTRY ROAD AS IT SHOULD NOT BE.

We must have roads. That necessity having been placed upon us, the experience which has taught us the wisdom of building other structures substantially, teaches us the economy of having roads that are good. We want roads which will withstand wear. We want the labor and money spent on them to be a paying investment. We want roads which will be good no matter what the state of the weather. We want roads which will not become rutted immediately the fall rains come on or when the frost leaves the ground in the spring, remaining in rough ridges for a considerable part of the summer. A road which does this is a bad road. The money and labor spent on it is largely forced down into the mud, is plowed under within a year and wasted. A good road is an economical road.

In building an economical road, improvements must be made in such a way that they will last. Roads in Ontario have been built on the same principal as is a wagon which breaks down under the first load, and is used for firewood after a year of service. Most of the leading roads of Ontario have been made and remade a score of times and are still bad roads. They are of the kind that "break up." A road that "breaks up," like anything else that breaks up, is a poor investment. When road building is rightly understood in this country, township councillors will no more think of building roads that will break up in the spring than they will think of constructing houses that break up in the spring, barns that break up in the spring, or fences that break up in the spring

The road builders of this country have not given sufficient consideration to the effect of building bad roads. Year after year work of a flimsy, shiftless character is placed on the roads. The results are only temporary and are destroyed by a very little wear and traffic. In a very short time the work has to be done over again. But the evil does not end with this. This annual demand for repairs is so great that no township can respond to it. The roads instead of being repaired when

they need it are neglected, grow worse and worse, and all the evils of bad roads follow.

What bad roads are doing for this country is only one side of the evil. The other side is what they are not doing. The loss does not arise to much from the money and labor wasted every year as it does from the absence of the benefits which good roads would bring. Our loss must be measured not so much by the money and labor we are throwing away on bad roads, as by the opportunities which would come to us if the roads were good.

One of the greatest obstacles in the way of road improvement is the narrow view taken of the question by so many citizens of this country. They have been accustomed to think of roads merely as incidental to statute labor; and statute labor they consider as a means whereby each pathmaster can get a little work done in front of his own farm which will be of direct personal advantage.

They do not see nor appreciate the benefits which would accrue to the township, county and province. They overlook the public good. But public good is merely individual benefit conferred on every citizen. Money and labor spent on the roads of the township will enhance the value of every farm by increasing the demand for farm land; it will increase the profits of the farm by reducing the expenses of the farm. The dairying industry would be immensely benefitted by good roads, fruit growing would become more remunerative; sale would be obtained for products which now are not grown because the market cannot be reached easily and quickly.

Regarding country roads, he continues:

It would seem as though in everything the present methods in regard to roads in Ontario are contrary to good judgment. Gravel or broken stone is dumped loosely, without even spreading, on a badly graded, badly drained sub-soil. In the use of these roads the same recklessness is glaringly apparent. When wide tires have universally replaced the narrow tires which are now found on farm wagons, a great part of the road question will be solved. Narrow tires of two and one-half inches in width have only one-half of the bearing on the road which would be provided by tires of proper width. By referring to the supporting power of soils discussed in the paragraph on "Foundations," the effect of this is more apparent. By the use of a six inch tire, the roadway will support, without yielding, twice the load which it could support with a three inch tire.

Narrow tires cannot be too strongly condemned. They cut and grind the road, plow and upheave it. Wide tires, on the contrary, are a benefit rather than an injury to the road, inasmuch as they act as rollers to preserve a smooth, hard surface. In some localities wide tires are objected to under the argument that they increase the draft required to move the load. This may occur under certain occasional conditions of very wet and soft roads. But when wide tires are universally used this objection will disappear, as the increased draft is due to the ruts and mud caused by narrow tires.

DIMENSIONS OF ROADS.

For the average country road, a graded roadway twenty-four feet in width between the inside edges of the open drains, will be ample to accommodate travel. For the average road, if the central eight feet is metalled with gravel or broken stone, it will be sufficient. (See Fig. 1392 "Plan of Country Road." The depth and with of the open drains will have to be governed by circumstances. Sufficient capacity must be provided to carry away all surface water. The depth must be dependent also on the fall obtainable. With tile under-drains, deep open ditches are not needed to drain the road foundation. The use of tile does away with the deep and dangerous open ditches which may otherwise be necessary. The crown of the road should be such as to give a fall of one inch to the foot from the centre to the edge of the ditch.

GORMLEY'S SEEDLING CHERRY.—On page 317, volume 20, we referred to this cherry as being of great promise. To-day, July 12th, we have received another sample lot and consider them even superior to those received a year ago. Being of Canadian origin, no doubt the tree is very hardy, and would succeed over a wide extent of country. The color is bright red like the Montmorency, the form about that of the English Morello, and the flesh like that of a Bigarreau, not very juicy; it parts easily from pit, without dropping its juice, flesh yellowish, a wonderful keeper, and therefore a good variety for distant shipments. Mr. Gormley writes:

"This is a seedling cherry tree about 25 years old. I remember the tree coming up in a fence corner. It has never had any care, but has grown well under neglect. I want to know if it is a recognized variety, for if it is new it is very valuable, as the quality cannot be excelled and it bears every year."

FIG. 1394.—SPRAY OF "LORD DUFFERIN," GOOSEBERRIES

SIR,—I am sending you by this mail a sample of gooseberries. I don't know the name of them. I should like you to tell me the name of them if you can, in your next month's journal; also say if you think they are well grown. 13 weighs one-half pound; these are some of the largest, but the average berry weighs over ½ oz. each. The tree mildews. Can you give a cure for it? I should also like to see an article in your journal on red currants, as to the pruning of them. I have some good ones but they grow long branches, not suckers; they grow so long in a season that they break off with the least touch. Would it hurt them to cut them back some this month, so as to give them more strength at the joint? I like your journal very well. Oblige,

Yours truly,
R. C. VAUSE.

The gooseberries sent us by Mr. Vause resemble Whitesmith, but if of that variety they are of unusually fine size. We believe there is money in gooseberries of this size wherever the soil and climate is suitable.

The sandy soil of the Niagara district does not suit them; we cannot advise growers in such locations to undertake them with an eye to profit. Even the Downing and the Pearl, which, under favorable circumstances are the most productive of all varieties with us in Canada, are often only second-rate in productiveness on light dry soils, for want of vigor of plant; and even in seasons of great fruitfulness, when the Pearl and Downing bushes are literally loaded to the ground with their weight of fruit, we have seen the whole crop ruined by sun scald. This has been the case two years in succession at Grimsby, in Mr. Mc-

FIG 1395.—"PEARL." REDUCED ⅓.

Kinnon's fruit garden. He has the finest acre of Pearl gooseberries we have ever seen, under the very best of cultivation and fertility, and for two years past his bushes have been a marvel of fruitfulness, but both seasons he has lost the fruit from sun scald about July 1st, just before he was prepared to harvest them. He is so discouraged that he has resolved to root them out entirely.

We do not see that there is any money in growing any of the smaller varieties of gooseberries for profit unless prices improve; but, as we said at the outset, if any one has the location for growing the large varieties, there would no doubt be some money in them.

A moist clay soil with good drainage, and a northern aspect, is, we believe, the ideal place to grow gooseberries; and if any reader has such a place, we advise trying Whitesmith, Lord Dufferin, Crown Bob, and Industry. Our foreman grows Lord Dufferin in such location, and has excellent success. Our illustration of this berry is taken from a branch grown by him in 1897, on the northside of the Niagara Escarpment, on moist heavy clay, with nature's drainage.

The gooseberry needs plenty of manure for best results, and no one should make the mistake of supposing that shade is an advantage. Because the gooseberry and the currant will succeed in shade better than most other fruits, many people consider it a benefit, but this is a mistake, for the best results can only be secured in the open air.

FIG. 1397.—"INDUSTRY" AFTER PRUNING.

FIG. 1396.—"INDUSTRY" BEFORE PRUNING.

For pruning the gooseberry the best season is the winter, because it is then easier to see what wood ought to be removed. Fine gooseberries can only be had by thorough attention to this work, which consists in thinning out about half of the old wood each year.

In illustration we show Fig. 1396 an industry gooseberry bush before pruning, and in Fig. 1397 the same after pruning. These two illustrations are from bulletin of Geneva Experiment Station.

Mr. S. Spillett, of Nantyr, writes: I send you a pail of each variety of gooseberries that have borne that much this year. I never had such small Downings and Pearls. The severe scorching they got last year with mildew seems to have affected the vitality of the bushes. For big berries Crosby leaves nothing to be desired. Autocrat also has done well.

Mr. F. W. Porter, of Mount Forrest, writes:

Although this is the worst season for Gooseberries I have seen for many years, what with spring frosts and the Aphis they are in a bad condition, still I think I can give you some fair samples of Whitesmith, but as we are later here than with you they had better be left on the bushes awhile longer to let them swell up. I had to cut my Industries down to the ground. The more tender Raspberries were killed in this neighborhood.

THE GRAPE LEAF HOPPER.

THE grape leaf-hoppers pass the winter in the adult state, hibernating under dead leaves or other rubbish, the survivors becoming active in spring, when they insert their eggs in punctures in the leaves of the vine. The yellow nymphs are hatched from these eggs during the month of June, and they resemble their parents except in size, and having no wings. During their growth, they shed their skins (which are nearly white) several times, and although exceedingly delicate and gossamer-like, the empty skins remain for some time attached to the leaves in a very life-like attitude. The nymphs feed together on the under sides of the leaves, and are very quick in their movements, hopping briskly about by means of their hind legs, which are especially fitted for this purpose. They have a peculiar habit of running sideways, and when they see that they are observed upon one side of a leaf, they will often dodge quickly around to the other. Each is furnished with a sharp beak or proboscis, with which it punctures the skin of the leaf, and then sucks out the sap; this produces yellowish or brownish spots on the upper surface. At first these spots are small and do not attract much attention; but as the insects increase in size, the spots often involve the whole leaf, which appears as though scorched, and often drops from the vine. Occasionally, vines become so far defoliated that the fruit fails to ripen. As the nymphs grow, diminutive wings appear, which gradually develop into the mature wings of the adult. With the full growth of its wings, it acquires such power of flight that it readily flies from vine to vine, and thus spreads itself in all directions. It continues its mischievous work until late in the season, when it seeks shelter for the winter.

The Clinton, Delaware, and other thin-leaved varieties suffer more from the attacks of these leaf-hoppers than do the thick leaved sorts like the Concord. These insects are sometimes quite abundant in a vineyard one year, and comparatively scarce the next. Their preservation, doubtless, depends much on favorable hibernating conditions. One should not wait until late in the season when the leaf-hoppers are full-grown and can fly, before beginning active warfare against them. When young nymphs, they can only hop about, and are also more susceptible to insecticides. As they suck their food from the interior of the leaves, the poisons can have no effect upon them.

Kerosene emulsion, thoroughly applied to the undersides of the leaves about July 1st, will check this pest.—R. N. Y.

WOODSTOCK HORTICULTURAL SOCIETY.

SIR,—In response to your request for some sketches of prominent members of our Society, with views of their homes and gardens, I send you one of Mr. T. H. Parker, and his home, together with a sketch of his life, kindly written up by Mr. R. W. Sawtell.

Yours truly,

JAS. S. SCARFF.

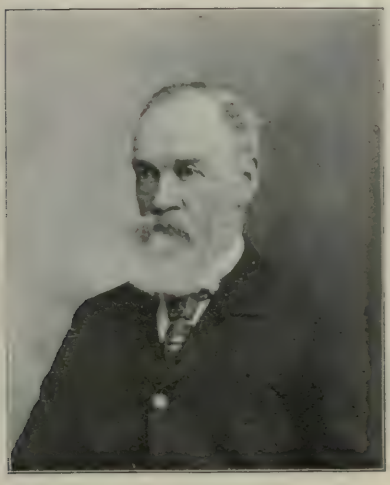

FIG. 1398.—MR. THOS. HARRISON PARKER.

The subject of this sketch was born in Cumberland, England, on the 10th day of February, 1828, and came to Canada, with his parents in 1831 His father settled on a farm and engaged in the lumber business, near Peterborough, where he remained 15 years. During that period this son worked with him, going occasionally to a school in the neighborhood. In 1846 the family moved to the County of Oxford and purchased a farm on the 16th con. of East Zorra.

Two years thereafter Thomas left home and returned to Peterborough, where he engaged in the lumber business, at a saw-mill on the river Otonobee. In the winter he attended the Grammar school of Rev. Mr. Taylor, an eminent scholar, and while here a desire for mercantile life possessed him. He fortunately found an opening in a large dry goods establishment in Brantford, where he apprenticed himself, and for further experience entered a larger house in Hamilton. With the drill and experience of five years' steady labor in two such houses, he felt equal to the task of managing a business for himself, and selected Woodstock as the centre of his labors. The choice was well made. There was but little competition, and with his energy the business prospered from the beginning. At the end of the first year he admitted into partnership Mr. J. D. Hood, an experienced book-keeper from England—whose sister he subsequently married

The firm of "Parker & Hood" was known in every household in the county, and beyond. It was also well known and trusted in the English markets, where one of the firm went annually to purchase supplies, and they were the first direct importers here. Such was their phenomenal success, that in eighteen years (1873) they sold their business, and each retired with a competency. But after such an active life, neither could long remain idle. Mr. Hood became the efficient Town Treasurer (and died some years ago), and Mr. Parker opened an office for insurance brokerage and private banking. He now owns a large number of buildings here, which together with other matters, keep him still in harness.

Mr. Parker has travelled a great deal, both on this continent and in the older countries; hence has been always well informed in business matters—as well as of things beautiful. His general knowledge and systematic methods have made him a valued citizen in public matters, and but few, if any, public enterprizes have failed to benefit by his counsel and financial help.

In the P. D. and L. H. R. R. he took a deep interest and was a large stock and bondholder. In the Board of Trade, Mechanics' Institute, Agricultural and Horticultural societies, Loan companies Hospital and kindred institutions, he has held office and rendered personal service. As early as 1861 he represented his ward in the Town Council, and later, as first and second Deputy Reeve, and in 1878 and 1879, as Mayor of the town.

The special reason for writing this sketch, however, is to show his love and long-continued interest in Horticulture and Floriculture. Vansittart Avenue, in this town, is now acknowledged to be one of the most beautiful in the Province, for its length. It is 132 feet wide and nearly a mile in length, with a double row of maples on each side the roadway, under whose arching branches a concrete sidewalk extends, making beautifully shaded promenades to the small shaded parks, and a cross street of similar width. At the north end of the avenue three public cemeteries are situated, and their well kept lawns, plots and trees attract many visitors.

When Mr. Parker first selected two half-acre lots on this street, it was not considered a fashionable locality, and but few dwellings of the better class thereon. He erected the building, which is represented at the head of this sketch, and laid out the whole space in lawn, shrubberies, hedges, fruit and kitchen gardens, in an artistic style, and for more than twenty-five years it was unequalled either in convenience or beauty; and there are very few of the modern and up-to-date residences in the town which surpass it now.

As an amateur flower and fruit grower, Mr.

FIG. 1399 —RESIDENCE OF MR. T. H. PARKER.

Parker has always excelled, and even in competition with professional gardeners, he has many times secured the first prizes at the Provincial and other exhibitions. At the World's Fair in 1876, he secured a bronze medal and diploma for fruit. He also succeeded in the same at the Intercolonial in London, England, and many other places testify, in medals and diplomas, to his skill. Our local exhibitions would seem incomplete without a display of grapes from the greenhouse and out-door vines of T. H. Parker. In the vegetable garden his success has been also marked, especially in early potatoes, which for many years he succeeded in having first.

Though bordering on the three-score-and-ten limit, Mr. Parker is still deeply interested in Horticulture, holds a seat at the board of the local society and takes part at all its meetings.

CALIFORNIA CHERRIES — These are among the most tempting fruits now displayed in our markets. They are seen on every fruit stand, as well as in the fancy fruit stores, and many of the push-carts are loaded with them exclusively. They are very large, packed in flat cases in regular rows, not a stem in sight, though the cherries are picked with the stems on. The very attractive appearance is enough to sell them. The push-cart men sell these cherries for five cents per one half pound, and each displays a large sign to that effect; but I have noticed that many of them have it all in large letters but the ½, so that any one reading a little carelessly might get the idea that the cherries are five cents a pound. This is a familiar trick of these fellows. As they sell for about the regular wholesale price, it is probable that they get their profit by giving short weight.—R. N. Y.

THE EXPORT OF OUR TENDER FRUIT.

AGAIN this question is at the front, and very soon some further experimental shipments will be sent forward. It is plain that the time has come when we must export our fruit or give up the business, for we are producing more fruit than Canada can consume. Then when we succeed in reaching a foreign market with our peaches and pears, we must study the best export varieties and plant extensively those kinds. This may entirely revolutionize an orchard, but it will bring success.

sary that a suitable package should be used. It should be (1) strong enough to provide for safe carriage; (2) so constructed as to provide for thorough ventilation; (3) cheap; and (4) of a size convenient for handling. No one package is suitable for all kinds of fruit; but the package for the carriage of every sort of fruit should meet these requirements. Each package of fruit, if thoroughly closed at a warm temperature, becomes practically a generator of heat, like a slow-burning stove; hence the need of openings for ventilation that the

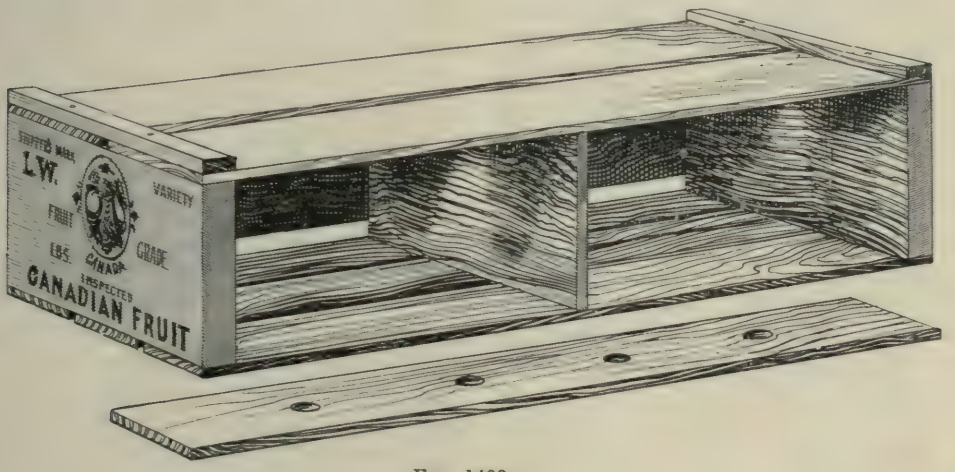

FIG. 1400.—

We have just received the report of the Commission of Agriculture, Prof. J. W. Robertson, in which he reviews the work of the past year in the dairy, live stock and fruit interests. In the section devoted to this latter he reviews the work of the year 1897 in experimental fruit shipments to Great Britain, and then draws the following general conclusions:—

PACKAGES.

The value of tender fruits in Great Britain depends chiefly upon their condition. To ensure the preservation of their condition at its best, it is necessary that a suitable package should be used. It should be (1) strong enough to provide for safe carriage; (2) so constructed as to provide for thorough ventilation; (3) cheap; and (4) of a size convenient for handling. No one package is suitable for all kinds of fruit; but the package for the carriage of every sort of fruit should meet these requirements. Each package of fruit, if thoroughly closed at a warm temperature, becomes practically a generator of heat, like a slow-burning stove; hence the need of openings for ventilation that the cold air may have a chance to cool the fruit.

The following cuts illustrate the packages which are recommended for use in the shipment of pears, peaches and tomatoes to Great Britain:—

Fig. 1400 shows the case with one side off.

Fruit is to be packed from the side of the case. After it is filled, the side is to be put on in such a way as to hold the fruit firmly, but not to bruise it.

The following are the dimensions of the case, in side measurement:—

Length, 22 inches; width, 11¼

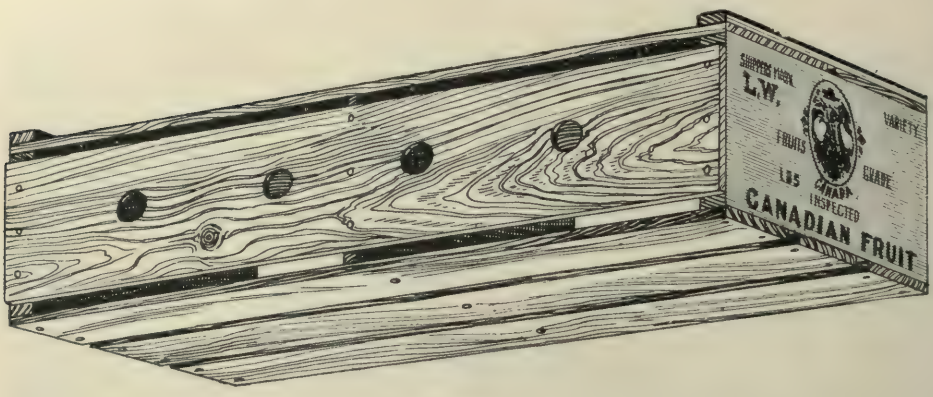

Fig. 1401 —

inches; depth, 4½, 5 or 6 inches, according to the size and kind of fruit to to be packed.

The top, sides and bottom of the case are made of lumber ¼ of an inch thick, planed on the outside. The top and bottom pieces are put on, leaving ¼ of of an inch space between them as openings for ventilation. The side pieces are ½ inch narrower than the inside depth of the box. That permits ventilation at all four edges of the case.

Each side piece has four holes for further ventilation.

The end pieces are ⅞ of an inch thick, planed on both sides; and the centre piece is half an inch thick, also planed on both sides.

The cleats at both ends of the top are ½ an inch thick by ⅞ of an inch wide. They keep the cases apart when they are stowed one on top of another.

The pieces of the top of the case are fastened to these cleats before they are nailed to the end-boards and centre-board.

Fig. 1401 shows the case lying bottom upwards, and illustrates the openings for ventilation.

PACKING.

It is essential that the fruit should be picked at the proper condition as to ripeness. When pears are full grown they appear to ripen so as to yield a better flavor when ripened *off* than when ripened *on* the tree. Care should be taken in the handling of all tender fruits to prevent bruising. The sorting and wrapping should be done in such a way as to involve the least possible handling of the fruit. If the fruit can be cooled before it is sorted and wrapped, so much the less will be the risk of injury.

The packing of the fruit should be done in such a way as to keep it firm in the package. An excess of packing, in so far as that prevents circulation of air, is objectionable. Some kinds of packing are liable to become mouldy from the dampness caused by evaporation from the fruit. Paper and excelsior packing are of that sort.

Only such fruits should be packed as are sound, of regular shape, and of fairly large size. Tomatoes are the exception in the matter of size. Medium and small-sized tomatoes sell for about one-half more per case than large-sized tomatoes.

COOLING.

All tender or soft varieties of fruit should be cooled as quickly after they are picked as is practicable. For long keeping, they should be cooled to a

temperature below 36° and 40° Fahr., as warm fruit generates heat by the changes which proceed in it. It is thus much more difficult to cool than inert products, such as meat, etc. If the fruit can be even partly cooled before it is wrapped, the risk of spoiling will be lessened to that extent.

Packages containing warm fruit should never be loaded close in a railway car in warm weather. If a refrigerator car be used, well iced, the generation of heat in cases of warm fruit will more than counter-balance the cooling power of the ice. The fruit will continue to ripen, and decay will begin.

APPLES.

Early ripening and soft varieties of apples should be packed in ventilated barrels or boxes, and sent in cold storage. Otherwise, a large proportion of them are likely to arrive in a slack and wet condition and to be sold for a price which can entail only loss.

A report was made to me by Mr. Arthur R. Fowler, of Montreal, agent for Messrs. Garcia, Jacobs and & Co., on two shipments of early apples sent by him in August. The two shipments were from one lot of apples from the same section in Western Ontario. So far as Mr. Fowler knew, the apples in each of the two shipments were similar as to variety, condition when packed, and manner of packing. That is to say, the one lot of apples, received from a place in Western Ontario, was divided into two shipments, without particular selection. One of these shipments, containing 267 barrels, was shipped on the steamship "Kastalia" to Glasgow in cold storage on 26th August. The apples of this shipment were reported as being delivered all in good condition, and were sold at an average price of 18s. per barrel, which netted $2.45 in Western Ontario. The other shipment, consisting of 325 barrels, was sent forward as ordinary cargo to Liverpool. The apples of this shipment were reported as being delivered in an unsatisfactory condition: 124 barrels were reported "wet" or "slightly wet," and 81 barrels as "slack." Thus 63 per cent of the shipment, sent as ordinary cargo, were landed in a damaged condition. The whole shipment was sold at an average price of 8s. per barrel, which netted 75 cents per barrel in Western Ontario. Evidently the wet and slack condition of the apples when delivered from the steamship, was due not to the kind of fruit or the manner of packing, but to the fact that they had been heated during transit, and were greatly damaged in consequence.

It is therefore evident that for the carriage of early and soft apples, cold storage is necessary to ensure good condition and reasonably good returns to the shippers.

The later and firmer varieties of apples can be shipped safely if cooled below 50° Fahr., packed in ventilated barrels, and carried in the holds of steamships provided with air ducts for causing thorough ventilation. The cold air should be conveyed to the bottoms of the holds, perhaps in a manner similar to air shafts for carrying cold air to the stokers; and fans should be used for sucking the warm air out. If these were used mainly during the night only, the holds could be kept sufficiently cold to land apples entirely undamaged by their transit across the ocean.

The following table shows the quantity and value of apples imported by Great Britain, year ending 31st December, 1896.

From.	Quantity.	Value.
	Bushels.	$
Australasia	158,652	393,543
Canada	2,642,168	3,145,141
Other British Possessions	13,483	18,503
United States	2,614,389	3,271,582
Germany	14,470	19,472
Holland	52,005	67,968
Belgium	311,418	336,365
France	216,765	255,081
Portugal	146,012	181,697
Other Foreign Countries	7,594	12,123
Total	6,176,956	7,701,475

Table showing average prices realized per barrel for the following varieties of Canadian apples, sold in Great Britain, season 1897.

Varieties.	Average L. Price.		Average H. Price.	
	s.	d.	s.	d.
Alexanders	8	7	15	5
Baldwins	15	4	20	6
Ben Davis	16	0	18	6
Blenheim Pippins	16	0	20	0
Blush Pippins	10	0	14	9
Colverts	10	4	14	5
Cranberry	20	9	23	0
Duchess	19	0		
Fallawaters	20	0	24	0
Golden Russett	15	10	18	11
Greenings	15	0	17	0
Jennettings	4	4	8	8
Kings	22	4	26	11
Maiden Blush	8	10	12	6
Phœnix	14	6	18	3
Ribston	13	3	16	6
Snows	7	5	14	8
Spys	14	8	21	7
St. Lawrence	3	6	7	10
Wealthy	7	3	15	9

PEARS.

Less attention is paid in Great Britain to the variety of pears than to the soundness and nice appearance of the fruit. Pears of a typical and regular shape are wanted, and from a medium to a large size.

From the trial shipments it appears that a large trade can be created at prices which will be remunerative to the growers here.

The following table shows the quantity and value of pears imported by Great Britain, year ending 31st December, 1896.

From	Bush.	Value.
	Quantity.	$.
British Possessions	11,916	24,333
United States	37,712	112,502
Holland	47,717	68,941
Belgium	143,499	182,485
France	239,295	606,792
Other Foreign Countries.	3,684	7,760
Total	483 823	1,005,813

PEACHES.

Tender varieties of peaches, such as Crawfords, can be shipped with safety only when the fruit is picked in a firm condition, and cooled to a temperature of under 40 degrees soon thereafter. If packed in cases such as shown at figures 1 and 2, and carried at a low temperature, it appears practicable to send peaches safely to Great Britain. Their arrival in first-rate condition will doubtless create a demand for them ; but the shipment of them will always be more difficult to carry on successfully than that of apples and pears.

TOMATOES.

Tomatoes can be shipped safely. The price that may be obtained regularly will depend so much on the supplies available from other countries that no safe estimate can be made. A large supply of tomatoes for Great Britain is received from Teneriffe, Canary Island, the Channel Islands and France.

Those varieties which are of medium size, smooth and regular in shape, solid, with small seeds cavities, sell for the highest prices. In the trial shipments last year, tomatoes of small size were

sold at 9s. 4d. per case, when tomatoes of large size at the same time sold for only 6s. 8d. per case.

The varieties recommended for shipment to Great Britain by Mr. John Craig, late Horticulturist at the Experimental Farm, Ottawa, are :—" Livingston's Beauty, Favourite, (Livingston), Early Ruby, (sometimes irregular) Ignotum, Long Keeper (Thorburn), Stone (Livingston), Liberty Bell and Cook's Favourite. Dwarf Champion is a smooth, desirable sort, but not very productive."

Fruit intended for Great Britain should be picked when fully grown and when beginning to change colour. If provision has not been made for the carriage of it in cold storage, the fruit should be picked and packed when of full size, but while still a green colour and well glazed.

Only sound, smooth tomatoes should be selected. They should be carefully picked, so as to be free from bruises ; and they should be graded in size, with regard to their characteristic colour when matured. Scarlet and purplish-red varieties should not be packed together in the same case.

Each tomato should be wrapped in tissue paper, or in a light, cheap grade of printer's paper. They should be carefully packed stem end down, so that each one will be held firmly in place when the case is closed.

PLUMS.

It is doubtful whether a profitable trade can be development in the shipment of plums from Canada.

The following table shows the quantity and value of plums imported by Great Britain, year ending 31st December, 1896.

From	Quantity.	Value.
	Bush	$.
British Possessions	958	11,937
United States	2,729	15,388
Germany	154,620	200,166
Holland	76,554	100,409
Belgium	78,571	117,438
France	246,773	731,114
Other Foreign Countries	40	221
Total		

GRAPES.

The following table shows the quantity and value of grapes imported by Great Britain, year ending 31st December, 1896.

From	Quantity.	Value.
	Bush	$.
Channel Islands	49,390	499,237
Other British Possessions	9,812	32,777
Belgium	12,531	75,560
Portugal	126,122	154,162
Spain	677,196	1,362,137
Other Foreign Countries	3,766	31,223
Total	883,244	2,155,096

From the quotations from letters of those to whom Canadian grapes were shipped last season, it is evident that there is not yet a demand for them in Great Britain. It may be possible to cultivate a taste for them, and thus to create a demand which may lead to a profitable trade. I do not think it will pay to send the early ripening sorts of grapes. They should be thoroughly ripened before they are taken from the vines. Trial shipments of different varieties are to be made again in the season of 1898, and until further information has been gained I am not able to make any recommendations on the subject.

FINE JESSIE STRAWBERRIES.

SIR,—I write to tell your readers of my great success with the Jessie strawberry. I had one specimen weighing 1¼ ounces and a number of one ounce and over, and measuring five to six inches in circumference. I have only one other kind to compare them with, that is the Gandy, and the Jessie can beat them more than double both in size and quantity. I am more astonished at this as in the test at Guelph the Jessie is put down at 88, while the Gandy is 69 and 19 respectively for 1896-1897.

Now I and perhaps many others of your readers are anxious to get the best. Can you tell us what they are, and where they are to be obtained? I see a Mr. C. S. Pratt of Reading, Mass., says the Clyde, Glen Mary and Sample are the best; do you endorse that statement? Can the Woolverton, Ruby, Wm. Belt, Haverland, Tennessee, Prolific, or any of them be obtained and where?

Yours Respectfully,

L. FAIRBANKS.

Whitby.

With reference to Mr. Fairbanks' experience with the Gandy and Jessie strawberries as compared with ours here, I may say this is but another evidence of the proof of the statement that every fruitgrower must to a certain extent be an experimenter for himself. Varieties differ so much in different soils and sections that no one experiment will answer for all. At an experiment station like this we can by repeated tests with all the varieties that can be obtained narrow down the list to a few of the leading varieties. By following up the tests with these varieties on their own soils growers may easily find out just what would be best for their particular soil and section.

In looking over the records I find that the Gandy, while not quite so large on the average as the Jessie, yet has given quite a bit larger yield for three years in succession.

We have given no attention to the weighing of individual berries, but think we would have no difficulty in beating Mr. Fairbank's record with some of our specimens of Marshall, Woolverton, Mammoth and a number of others.

As to what are our best varieties, it is rather early yet to include this year's results in making up an average of three years, as some of our latest varieties have not yet reached their midseason, but taking an average of the results of the past two years Van Deman easily ranks as our best early variety. Saunders, Stone's Early, Warfield and Haverland, in the order named have been the most productive. Nearly all these, however, have their weak points. Van Deman is valuable as a beautiful, fair-sized, very early berry, but the plant lacks sufficient vigor to mature the late settings of berries. Saunders is a first-class all round berry, late, large and firm, plant prolific, healthy and vigorous. Stone's "Early" is not early, and the berry lacks size and firmness. Its most valuable quality is its productiveness. Warfield, on account of its firmness and dark rich color is one of the best canning varieties, and in a favorable season on moist rich soil it is all that could be desired, but it cannot stand drouth particularly on a light sandy soil. Haverland is one of the old reliables, and lacks only firmness to make it a first-class berry in every respect.

Of the newer varieties Clyde and Glen Mary are making an excellent record for themselves this year, and the former bids fair to head the list of over 220 vari-

eties we now have under test. They are both large and handsome and would make good shippers, but we will wait until the end of the season before going into details.

Wm Stevenson, Guelph, is the only man in Ontario, I know of, who has all the varieties mentioned for sale. Since there has been such a demand of late for the best varieties would it not be well for growers having plants of these for sale to put their "ad" in the HORTICULTURIST.

Yours Truly,
H. L. HUTT.

O. A. C. Guelph.

A NEW PROFITABLE CANADIAN INDUSTRY.

By D. W. BEADLE.

THERE is a plant that grows in many parts of Ontario and Quebec which for some time has been an article of export, but now has become very scarce and is nigh to extermination, because the natural increase is not able to maintain a supply equal to the demand, especially as no effort was made to leave undersized plants to produce seed. In 1891 the Ontario Legislature prohibited the digging of it from January to September, with the object of preventing its destruction; but so long as greedy hunters would dig up the plants regardless of size, the open season is sufficient to accomplish sooner or later its extermination. The export from Ontario and Quebec ten years ago was estimated to be worth a hundred thousand dollars; it is now so small that it cannot be found in the exports of the last fiscal year, but occurs among names of other roots imported. The plant referred to is

THE GINSENG, *Panax quinquefolium. L.*

It has been successfully cultivated in the United States, and inasmuch as it is also at home in our forests and can be just as easily grown here, therefore this article is written, both to call attention to the subject and to give the latest information in the possession of the writer concerning the method of cultivation and preparation for market, as well as its market value and the probable profitable demand. The writer is indebted for much of the information and for the illustrations which elucidate it, to a paper on the cultivation of the American Ginseng by Professor George C. Butz, published by the Department of Agriculture of Pennsylvania.

There is also a special incentive that appeals to the enterprising Canadian to induce him to give some consideration to this matter, in the fact that ginseng grown in our climate is of better quality, and therefore commands a higher price than that grown to the south of us. J. L. Cilley, a New York exporter, issued a circular last August in which he offered to pay for Canadian, Vermont, New York and Northern Pennsylvania Ginseng $3 to $3.20 per pound; for that of Southern Penna, Northern Ohio, Northern Indiana, Michigan and Western Illinois, $2.90 to $3.00: a difference in our favor of twenty cents per pound.

THE CULTIVATION OF GINSENG

begins with the gathering and planting of the seeds which are contained in the berry-like fruit, which is scarlet when perfectly ripe; two, sometimes three in a berry. These will be found ripe in the latter part of August. They do not

germinate in the next spring, but remain dormant during all of the following summer as well as both of the winters, and come up in the second spring. During all this time they must be kept moist to ensure germination. They can be safely kept over the first winter and succeeding summer in a wooden box by covering the bottom with an inch thickness of moist leaf mould, strewing upon this a thin layer of seed to be covered with half an inch of leaf-mould, thus alternating with layers of seed and soil and finishing with an inch or two of leaf-mould. The box should be kept in a shady place, mice and ground squirrels excluded, and the soil always moist, not soaking wet.

If preferred the seeds may be sown at once in

THE SEED BED.

It may be made under the shade of tall trees where there is no under-growth, or if proper shade is provided, in the open garden. In either case the soil must be light, loose and rich. If necessary to enrich it, let it be done with well-rotted, never with fresh, manure; and that thoroughly worked in so as to be evenly distributed in the soil. The ground should be dug a foot deep, and everything that would interfere with the direct downward growth of the young plants, as sticks, stones, tree roots, etc, carefully thrown out. When the bed is made in the woods, it will usually be convenient to work in sufficient leaf-mould to make the soil light and porous, but if made in the garden it will be necessary to procure a quantity and work in a liberal supply. Narrow beds, say three feet wide, are preferable for convenience in weeding and stirring the soil between the rows of plants. For planting the seeds, drills are made three inches apart and one inch deep, into which the seeds are dropped one inch apart, and covered. If there is danger that the soil may crack or a crust be formed, the bed is covered up with some leaf-mould and brush spread over the surface to remain until the young plants are expected to appear. Fig. 1402 is is from a photograph of a seed bed in the woods. After the seeds have been

FIG. 1402.—GINSENG —Forest seed-beds with 100,000 seedlings.

in the moist soil for a year and a half, whether they passed the first twelve months packed in a box or the entire eighteen in the seed bed, the young seedlings are expected to appear with the advent of warm weather in the second spring. During the first season they attain only an inch or two in height bearing three simple leaves in a whorl at the top. If the soil has been favorable and the plants well cared for by weeding and cultivation, the seedlings will at the end of the second season's growth be large enough to be transplanted into the

PERMANENT BEDS.

They are prepared much the same as the seed beds, the soil thoroughly pulverized a foot deep, everything taken out that would interfere with free root development, yet having less of leaf-mould than the seed beds, more like a garden loam that is light, friable, porous

and rich. Transplanting can be done in early spring, but it is said that September or October is preferable. The plants are set out in rows six inches apart each way, putting the new bud of the root stalk two or three inches below the surface. Care must be taken to preserve all the little rootlets, and all breaking or trimming of the roots in any way sedulously avoided. During the growing season the soil between the plants should be frequently stirred, and kept free from weeds; and before the ground freezes the beds covered well with forest leaves, upon which brush is laid to prevent the leaves from being blown away. Cattle are to be fenced out from access to all beds of ginseng, for they not only do great damage by trampling on the beds, but also have a great fondness for devouring the foliage.

When circumstances are favorable, these beds as also the seed beds are made in the forest where the trees afford necessary shade and there is a free circulation of air. When they are made in the open ground

ARTIFICIAL SHADE

must be provided, such that while the plants have all the needed shade they have also an unhindered flow of an abundance of air. Mr. George Stanton, who is probably the most successful grower of Ginseng, secures all of these essentials by the following means: He sets rows of posts eight feet apart and six feet apart in the row, two feet deep in the ground and six feet high, and braces them with strips an inch thick and three inches wide, nailed upon the top of the posts, and running in both directions. Upon these are fastened screens made of lath, having a space of five-eighths of an inch between the strips of lath. Screens made in the same way are fastened to the sides, enclosing the whole from the ground upwards for three feet, the remaining three feet being left open. Fig. 1403 is a

FIG. 1403.—GINSENG.—Lattice shading for Ginseng beds.

photographic representation of Mr. Stanton's lath screened bed. In these beds the plants are grown for five or six years, until they attain the size requisite for profitable marketing. Before that time they will have reached the fruiting age, when above a simple stem about a foot high, bearing a whorl of three to five palmate leaves composed usually of five obovate pointed leaflets, appears a simple umbel supported by a slender peduncle, and containing in July from ten to fifty yellowish green flowers, which will be succeeded by green berries that in August turn at first purple, then red, and at last, when perfectly ripe, scarlet. These will be carefully gathered and the seeds cared for, from which enlarged plantations and successive crops can be secured. In the fall this part of the plant which is shown in Fig. 1404, dies; that which survives, and which alone is of commercial value is

THE ROOT.

The underground part is not wholly root, that which lies just below the surface, called root-stock (rhizome), is not fleshy, and is marked with scars, which indicate the annual above ground growth

FIG. 1404.—GINSENG PLANT.

of previous years, thus telling the age of the plant. It is believed that the root does not increase materially in size after the eighth year, though it lives to a considerable age, for some have been found having sixty-five of these scars. When roots are eight years old, two years in the seed bed and six in the permanent bed, they will be considerably larger than the average of those growing wild, of the same or even greater age. Sometimes roots are found of the form shown in Fig. 1405; these are highly valued by the Chinese, and it is said are worth their weight in gold Grosier says that ginseng signifies resemblance to a man. When the cultivated plants are seven or eight years old they will be of the size in which they undergo

PREPARATION FOR MARKET.

In taking the roots out of the ground it is important that they should not be cut or broken, for all cut or mutilated roots are classed in a lower grade. They are then to be washed perfectly clean, without any trimming of the rhizome or rootlets, and dried by spreading them out on hurdles in the sun, or in an evaporator; if in the latter the heat must be regulated so that the roots do not become scorched or partially cooked. If dried quickly without injury they will look better and sell better.

When thoroughly dried the wild roots loose about one-third of their weight, but the cultivated, according to Prof. Butz, do not shrink so much. They have then only to be neatly and securely packed in boxes to be ready for market That there is a

CONSTANTLY INCREASING DEMAND

will be seen from the statistics of the export from the United States, shewing the number of pounds exported and the average price per pound.

Ten years,	1868-1877—3,881,539 lbs.	at $1.09	per lb.
"	1878-1887—3,690,360 lbs.	at $1.75	"
Nine years,	1888-1896—2,193 063 lbs.	at $3.04	"

Consul Johnson in his report dated Amoy, July 29th, 1897, states that it sells in Amoy at from $12.50 to $17.50 per pound, that at these figures Amoy handled in 1896, $88,517.34 worth of it which came from America in addition to the value of $44,222.80 from Korea.

FIG. 1405.—WILD ROOT; [Human form].

He adds also the following significant statement, "I do not exaggerate when I state that it is possible to *market annually* in China *twenty million* dollars worth of these roots." The italics are the writer's, not Consul Johnson's.

Given a suitable soil, good cultivation with proper attention to shading, ventilation, and preparation for market, the growing of ginseng in Ontario should be

A PROFITABLE INDUSTRY.

Mr. Geo. Stanton is quoted by Professor Butz as stating that the cash product in less than five years from less than two square rods (7 15 of the land had been in ginseng only four years) was $387.96. For 28 pounds of his last season's crop he received $5.50 per pound, which is a good illustration of the superior quality of cultivated over wild roots. Taking Mr. Stanton's figures as a basis, with time of cultivation in permanent bed six years, and quantity of ground two square rods, we have at the end of six years a return of $64.66 a year for two square rods which when increased to a quarter of an acre, which is forty square rods, would make the revenue at the end of the six years $7,759.20, which would be a dividend of $1,293.20 for each year, from which is to be deducted all the expense of cultivation, rental value of land, interest on outlay, and reduction in value of tools and plant.

At present it is evident, from the figures given by Consul Johnson, that the exporter has more than a fair share of the profit; for when he gets $17.50 per pound for best quality and pays only $5.50, there is a margin of $12 per pound. Surely the exporter's expenses are not twice those of the grower.

One word of advice to such readers as may feel disposed to embark in the cultivation of ginseng. Go slow. Begin with a small bed. Experience will teach. If failure be the result then the loss will not be severe. If success crown the undertaking, which is more probable to him who proceeds cautiously, this article will have not been written in vain.

A STANDARD APPLE BARREL REQUIRED.

Dealers and shippers who will handle a large part of the commercial apple crop of '98, which promises to be a full one, are once more taking up in earnest the question of a uniform barrel. As heretofore pointed out in our columns, the adoption of such regular package must eventually prove a benefit to to growers. It will serve to build up confidence on the part of many consumers who have been too often cheated in the short measure barrel. An announcement is being sent out from the office of the National apple shippers' association, largely signed by dealers all over the U.S., stating their requirements in this direction. This is as follows:

A large crop of apples is expected this season. To realize a fair price we will necessarily export a large amount, and as we shall have to compete with Canada, we must have good co-operage and a standard barrel. The National apple shippers' association and the National league of commission merchants have already adopted the following dimensions: Head 17⅛ in., stave 28½ in., between crozins, bulge not less than 64 in., outside circumference. The above are measurements of the Minneapolis flour barrel. Believing it for the interest of the buyer, shipper and grower to bring about this much needed reform, we, the undersigned buyers and shippers, agree that we will not purchase apples packed in barrels that hold less than the above.

THE FARMER'S FRUIT GARDEN.

AT the meeting of the Quebec Pomological Society last January, Mr. R. B. Whyte, of Ottawa, read a paper on the above subject, and his remarks will be of special interest to our readers living in the northern sections. After showing the great importance of having the table well supplied with fresh fruit, and the comparatively small outlay necessary to grow the finest varieties, he said that half acre was garden enough to furnish any family with fruit both for canning and for using fresh. He would lay it out 105 x 210 feet, and fence it with a wire fence ; and just one path down the centre from end to end, wide enough to admit a horse and cart. Along this he would devote a few feet to flower growing, interesting the boys and girls in their care.

He advised planting about 6 hills of rhubarb — Linneus for early, Stott's Mammoth for late ; of strawberries, 200 plants ; of raspberries, he would plant a good large plot, in the autumn, cut back to five feet in height, mulch and manure, and bend the canes to the ground, holding in place with pieces of cordwood, or other weights ; this is all the winter protection necessary, even at Ottawa. Currants and gooseberries were also included ; for the latter a heavier soil is necessary. He says :—

Among over forty varieties of gooseberries that I have grown, the Whitesmith has been the most satisfactory, being perfectly hardy, and free from mildew, large size, good quality and a heavy cropper. Among the native sorts the Downing stands at the head for vigor, size and quality : among the standard varieties there are many new kinds offered by the dealers that are said to be superior to it, but none of them have been sufficiently well tested yet to establish their claim. It is unfortunate for the reputation of the gooseberry that it has been the custom in this country to pick them green for cooking purposes, before they have acquired their proper flavor and sweetness ; few are aware , even among those who have grown them, how delicious and wholesome a thoroughly ripe gooseberry is. Plant six each, Downing and Whitesmith, and you will be surprised how many of them you will use raw.

I doubt if it is wise for the average farmer to attempt growing grapes in this part of the country, or in any but the most favored parts of this province. If you have the proper location, a warm, gravelly soil, a southern slope exposed to the sun all day, and are willing to give them the necessary attention, by all means try a few, but be sure to plant only early ripening kinds, or some seasons you will lose a large part of your crop by early frosts. I have found the following very satisfactory kinds at Ottawa : In black, Worden and Wilder or Rogers 4. Moore's Early is considerably earlier than Worden, but it is too shy a bearer to be profitable. Among the large number of good red grapes, first place must be given to Rogers 3, Delaware and Brighton, the latter the finest in quality of all American grapes. There are not many really desirable green sorts. Moore's Diamond and Green Mountain are the best I have seen. All of these will ripen their fruit in any ordinary season.

The finer varieties of plums, such as can be grown in Western Ontario, are not hardy enough to stand our severe winters, and it is only a waste of time and money to attempt growing them in this district, except in very favored localities. Up to a few years ago we

could grow with great success the improved forms of our native Canadian red plum, but of recent years the prevalence of the fungous disease, known as the blight, has made it practically impossible to get a crop of clean fruit, and large numbers of trees are being cut down every year. To a certain extent this disease can be controlled by spraying with copper sulphate and Bordeaux mixture, but the spraying must be very carefully done to be of any value. Fortunately, there has been introduced in recent years a form of native red plum from the North Western States that has so far been free from this disease. The best known varieties of this fruit are De Soto and Weaver, but the Wyant and Hawkeye are superior to either of them in size and quality. All of these are perfectly hardy, and bear every year enormous crops of yellowish-red plums of good flavor, not equal to the best varieties grown in the west for table use, but still very good and extra fine for canning. The trees do not grow very large, they bear such heavy crops that they have little energy left for wood growth; the only pruning necessary is to remove any branches that run on one another.

Plums should always be planted in the spring as early as possible. Make the hole larger than the roots extend, and about eighteen inches deep, throwing the subsoil to one side; trim off all broken ends of the roots with a sharp knife, work the surface soil well in among the roots, and when all covered tramp the soil firmly. Do not have the tree any deeper in the ground than it was in the nursery. Twenty feet apart will give them ample room.

The great variety of ways in which it can be used, its wholesome nutritious properties, and long keeping qualities make the apple the king of fruits. A man who can grow the Fameuse, McIntosh Red or Wealthy, does not need to envy the inhabitant of warmer climes his finest fruits. No other fruit of temperate climates is at the same time so appetizing, so wholesome and so nutritious as our apple, and in no other part of America can these varieties be grown in such perfection as in the Province of Quebec. There are not many kinds of winter apples that will stand our severe seasons, but for summer and autumn fruit our climate is unsurpassed. Among early apples Tetofsky and Yellow Transparent take the lead. Tetofsky is a first-rate cooking apple, and when ripe, good for table use as well. It has an unfortunate habit of dropping a large part of its crop before it is ripe; it grows in such large clusters that as they grow some of them are shoved off the branch, but this is no great loss as most of them are large enough to cook when they drop. The Yellow Transparent is a rather larger apple and better for table use. Instead of dropping prematurely it holds on to the tree till it rots, if not picked when ripe.

Closely following these come the Duchess and Peach. The former, the type of hardiness and vigor, will thrive wherever an apple can grow; it is a little course for a table fruit but unrivalled for cooking and an enormous bearer of large beautiful apples, the skin being streaked and splashed with red. The Peach is a much better table fruit, finer grained and better flavor, not so vigorous nor so prolific as the Duchess, green in color with a red flush on the sunny side. For late autumns and early winter the Fameuse, McIntosh Red and Wealthy are ahead of all other rivals. The Fameuse, most extensively grown, is too well known to need description. McIntosh Red is quite equal to it in quality; it is darker in color and de-

cidedly larger. Where the winter is too severe for these two to thrive, the Wealthy is a good substitute. It is as hardy as the Duchess and one of the most beautiful of apples; the quality is of the best either for cooking or dessert. It is at its best in November but keeps well till January. We have no winter apples suitable for this district that can compare with the King or Spy. Of well tested sorts, Baxter, Pewaukee, and Scotts Winter are the most reliable. The first two are large, dark-colored, showy apples, of only fair quality; the latter, while an extra good keeper, is too small ever to become a favorite. There are a great many new kinds offered as good winter varieties for severe climates, but as yet they are only on trial; those mentioned above are the safe ones to plant in the meantime.

Apple trees may be planted successfully in the autumn, but on the whole the spring is the best time. Many planters buy their trees in the autumn, trim the broken roots, dig a trench and bury them, covering with earth up to near the ends of the branches. The advantage of this method is that, after heeling in, the cut ends of the roots become callous, and are ready to put out new roots as soon as planted in the spring. Plant as directed for plums, only allow more room; 25 to 30 feet apart is none too far. One each of the above kinds will give you all the apples you could use if they all bore every year, but as they rarely do that it is better to plant two of each kind. If you would like to grow some crabs, the Gibb, Martha, and Whitney are all good sorts. the Whitney is large enough, and good enough to be used as a dessert apple, and is immensely superior to the Transcendent, so commonly planted.

Unless you are willing to grow a large number of cherry trees you had better leave them alone, for you have to feed the birds before you get any for yourself; they take fully three-fourths of all I grow. I have found Ostheim and Besserabian quite hardy, and of very good size and quality.

When you make up your mind that you ought to have a fruit garden, write to all the nurserymen that you know of, and ask for their catalogues, and prices; compare them carefully, and everything else being equal, send your order to the nearest one. You will find that you can always do best by dealing direct with the nursery. If in doubt as to what to plant, ask some of your neighbors what has succeeded with them, and profit by their experience. As a guide to you of what the cost should be, I have made an estimate of everything recommended in this paper:

6 rhubarb roots.....	$1 00
200 strawberries, assorted..	2 00
200 raspberries, assorted...	3 00
18 currants, assorted.....	2 00
12 gooseberries, assorted..	1 50
2 each 7 kinds of grapes.	3 00
2 each 2 kinds plums...	2 00
2 each 10 kinds apples..	6 00
	$20 50

These are all outside prices, and most of the above articles can be bought for much less from reliable Canadian nurseries, but supposing you pay these prices, at 7 per cent. it would represent a yearly outlay of $1.40. Do you not think it would be well spent money to have such a collection of fruit as I have described? I do.

RE BIRDS.

SIR,—In your issue of July you quote from the Toronto *Globe* a short article about birds. The newspapers and school teachers have had their say long enough on the bird question, and a word from people who suffer from depredations of the birds, particularly the protected ones, would, perhaps, not be out of season. Why should it be lawful to have eggs of crows, ravens, eagles, etc., and unlawful to have in possession the other kinds? One hawk is of more value to a fruit grower or nurseryman than any number of robins, and the hawk never picks a cherry, or in any other way injures any man's crops. Very rarely he may pick up a chicken, but it is only at long intervals he enjoys such a treat. One gentleman, a very large grower of fruit, told the writer a few days since that he had suffered this year the loss of the entire crop of a whole row of English cherry trees from robins, assisted by orioles. And the writer has every year for the last five or six, lost from one-half to three-quarters of his own cherries from the same pests. It is an indisputable fact that a couple of men with a spray pump can destroy more insects in a day than all the birds in a whole township do in a whole season. Instead of the law protecting robins, orioles, cherry birds, etc., they should be destroyed in the same manner that other recognized pests are, and our trust put in spray pumps for the destruction of the insects.

Yours, etc.,

W. C. ORR.

Stoney Creek.

EVAPORATED APPLE TRADE.

A LETTER was received at the Department of Agriculture yesterday from a large importing firm at Hamburg, Germany, who are anxious to get into communication with reliable packers, and who ask for the names and addresses of such firms. They were induced to look to Canada for trade through the advice of Mr. Harrison Watson, Canadian Curator at the Imperial Institute, London. In their letter they say:—"Of late years evaporated apples, pears, etc., have become largely consumed in this country, and of these the former take first place. We are thoroughly convinced that your country might get a large share of this trade if properly taken in hand. . . Another point we cannot impress upon you too strongly is that apples be dried only on wooden trays and not zinc ones. All apples, according to our laws, must be analyzed here on arrival by sworn chemists, and should a trace of zinc be found, which could only be the case were they dried on zinc trays, the buyers are free to cancel their contracts, for the fruit is not allowed to be consumed here. Evaporated apples imported here are packed in boxes of 50 pounds and barrels of about 200 pounds, and 90 per cent. of these are of the 'prime' grade shipments. Shipments are also made of 'choice' and 'fancy.'—Toronto Globe.

FRUIT TRANSPORTATION TO EUROPE.

The following letter has been sent by the Department of Agriculture, Ottawa, to the several steamship companies sailing from Montreal and Halifax:

"Last season a lot of early varieties of apples were shipped from Western Ontario to Great Britain. About one half of the quantity was forwarded in cold storage, and the remainder were sent as ordinary cargo.

Those sent as ordinary cargo were reported to have arrived all in good condition, and to have sold at an average price of 18s. per barrel.

Those sent in cold storage were reported to have been sold at an average price of 8s. per barrel, and sixty-three per cent were reported to have been landed in a "wet" or "slack" condition.

For the safe carriage of early varieties of apples it seems necessary that they should be carried at a temperature at or below 40° Fahr.

On examining the returns of twenty-nine cargoes of apples last year, I find that the same varieties of apples were sold at the same time at prices showing as much as 8s. 6d. per barrel of a difference between the apples which were landed in good condition and the apples which were reported as been landed in a "wet" or "slack" condition.

For the safe carriage of late fall and winter apples, it seems desirable that they should be so carried that they may be thoroughly ventilated, so that the heat produced by the fruit itself will be carried off.

When apples or other fruits are kept at a temperature above 40° degrees Fahr., they continue to ripen or go towards decay. That process generates heat. The increased temperature thus caused makes the fruit ripen still faster.

For the carriage of apples by your Line, could you arrange to have the hold or holds for apples thoroughly ventilated by an air duct, leading to the bottom of the hold, and by use of an electric fan or fans to suck the warm air from the top?

During any particular warm weather on the voyage, the ventilating ducts might be used only during the evenings or nights, when the air was cool.

Our department is calling the attention of growers and shippers of apples to the desirability of packing the fruit in barrels or boxes so constructed as to permit of ventilation through each barrel or box, and packed tight enough to hold each fruit firmly in place.

JAS. W. ROBERTSON,
Commissioner of Agriculture and Dairying.

THE TRIUMPH PEACH.

The earliest free stone variety. Frank J. Fox, of Lowell, Mich., tells in the *Fenville Herald* his experience with this valuable yellow-flesh variety. His neighbor planted trees several years ago and has had them in bearing in his orchard where the Triumph has distinguished itself as the most remarkable of all early peaches. The trouble with early peaches generally has been that they are cling stones, and that they rotted after being gathered, rendering it impossible to ship them to market. The Triumph has all the characteristics of of the best late peaches, being of large size, good color, yellow flesh and stone almost entirely free, and has none of the inclination to rot which the other early peaches have. The Triumph in this instance bore the second year from planting. Mr. Fox's trees bore the first year they were planted, but only to a small extent. He was surprised at the large size and fine appearance. The Triumph ripens with Mr. Fox at the same age as Alexander. Its flavor is fine and the pit very small. The peaches hang on the trees with great tenacity. We are glad to get this authentic report from a practical Michigan fruit grower.—Green's Fruit Grower.

CULTIVATION OF NATIVE PLANTS.

THE cultivation of our native plants is a matter that has received little attention, and it is doubtful if there is to be found growing anywhere in Canada, a respectable or representative collection. In our city parks and squares, large numbers of bedding and other plants are grown, often at considerable expense, and needing to be renewed every year; while our Canadian wild flowers, which could be procured with a little time and trouble and not much expense, and could easily be maintained permanently, are never seen except occasionally in wooded parks left in the natural state, and then only to a very limited extent.

If some of our Horticultural Societies, in the cities and towns where they are fortunate enough to have public parks, were to devote a part of their energies for a few seasons to making a collection of native plants, they would be both pleased and surprised at the result of their efforts. Such a collection properly cared for, with the plants well arranged and plainly and correctly labelled, would constitute objects of constant interest and of undoubted educational value. It is not contended that native flowers should be grown to the exclusion of other ornamental plants. Even in Florida, the wild flowers are few in number compared with the many that are cultivated there, and so it would be here. But a small space in the park or in the private garden, might well be given to them, which they would fill with beauty and interest, and where they would contribute to the popular knowledge of some of our indigenous beauties, which, in the older portions of the country at least, are in danger of disappearing.

The individual collector will find in the culture of our native plants, very pleasant and interesting recreation, aid in botanical study, general enlargement of knowledge, and that truest and best culture which is to be found in the sympathetic study of the wonderful works of God.

A minister who had to give up his charge on account of ill-health, commenced late in the season last year, to take up and bring home and plant, flowers he met with in his walks, that seemed to him worth cultivation. He found health and pleasure in the task, studied his Botany anew, and, with an interest he had never felt before, and made a very interesting and creditable collection of plants, and not a very small one either, for he had over thirty good varieties in fine growing condition.

The flower lover, no matter how poor, if he can make excursions to the woods, may have flowers that will satisfy the

heart's longings and give him as much true pleasure as the rich man's exotics give to him. A collection can be made and much pleasure derived from it without any knowledge of Botany; but a study of Morphology in such a book as the High School Botany (Spotton), carried far enough to make use of the key to the Families and Orders, is not a very serious undertaking and will be found very useful, particularly in the identification of the different varieties.

The dried specimens of the botanist always have an attraction for the true flower lover, but they cannot be compared either in scientific or ornamental value with the living plants grown under favorable conditions.

Our Canadian wild flowers that are worth the care and attention usually given to foreign varieties, are more numerous than is generally supposed. Many of them are very beautiful and nearly all are ornamental in cultivation. Naturally they will be found hardy and the most favorable conditions for their culture can be easily ascertained and understood. Nearly all of the best and most decorative are perennials, so that a collection once obtained would be permanent with a little care.

A good rule for transplanting would be to remove the spring-blooming plants in the fall and the summer and autumn flowering ones in the spring, but most of them can be transplanted easily and successfully at any time, even when in flower The flowers which the children carry home from the woods and plant when in bloom, nearly always take root and grow, and are lost only through subsequent neglect.

Generally, a rich friable soil will be found the most suitable, and if a winter covering be desired, there is nothing better than their own dead foliage, or the leaves of trees.

The method of arrangement will vary according to the taste of the cultivator, the place where the plants are to grow, and whether they are grown in a mixed collection or occupy space by themselves. As a general rule it is better to have the tallest growing plants in the centre of the bed, or back of the border, and the low-growing ones at the edge, with the others arranged between according to size; but there should be an occasional slight break in this arrangement to prevent stiffness, and care ought to be taken that, throughout the season, no considerable part of the plot would be left without bloom. Many of our common native flowers are among the best of the spring bloomers, as witness the Hepaticas, Trilliums, Canada Columbine, Wood Anemone and Spreading Phlox. Others, as the Willow Herb, Cone Flower, Flowering Spurge, Rose-flowered Yarrow, Pennsylvanian Anemone and Canada Violet, are in flower nearly all summer: while the Asters and Golden Rods, with their many varieties, come in at the end of the season

The Dandelion would create a sensation in the floral world, if previously unknown, and introduced as a novelty from Terra del Fuego, or some other country far enough away. The Wild Mustard (or Charlock), and the Corn Cockle, so unsightly in the eyes of the thrifty farmer, have claims to admiration; and the Viper's Bugloss, a pest difficult to eradicate and rapidly spreading, makes a fine appearance when seen in masses with its purplish-blue flowers. The Toadflax also has claims to beauty; the Wild Chicory (or Succory) has pretty blue, rayed flowers; the Teasel, which has given us our English word *tease*, has prickly flower heads, which are used for winter ornaments; and the despised Canada Thistle has a fine flower and

an agreeable and delicate fragrance. The Knotgrass, so common in our door-yards, has a pretty little white flower; the Thyme leaved Speedwell, often found growing in lawns, has very beautiful little pale blue flowers, in terminal racemes,

> "Nor India's rarest gem outvies
> The little Blue-eyed Grass."

Among native plants, we have such climbers as *Clematis Virginiana*, the Virgin's Bower, sometimes seen on verandas, and which retains its silky mass of feathery tails for a long time in the fall; *Adlumia cirrhosa*, Mountain Fringe, with small but pretty leaves and pink flowers; *Vitis cordifolia*, our native Grape, with fresh and luxuriant foliage and bright berries; *Ampelopsis quinquefolia*, the Virginia Creeper, more generally grown and better known than most native plants; and *Echinocystis lobata*, the Wild Cucumber, an annual, easily grown from seeds.

Among bog and aquatic plants, we have *Nymphæa odorata*, the Sweet-scented Water Lily; *Nymphæa tuberosa*, the Tuberous Water Lily; *Nuphar advena*, the Common Yellow Pond Lily; *Typha latifolia*, the well-known Cat Tail or Reed Mace; *Caltha palustris*, Marsh Marigold; *Calla palustris*, Marsh Calla, which seems to offer a fine opportunity to the hybridist for cross-fertilization with either the Little Gem or common Calla; *Alisma plantago*, Water Plantain; *Acorus calamus*, Sweet Flag; *Iris versicolor*, Blue Flag; with different varieties of *Sarracenia*, Pitcher Plant; *Lemna*, Duckweed; *Saggitaria*, Arrow-head; various aquatic orchids and ferns, and numerous other plants, which will thrive in deep or shallow water or in merely damp places, and whose culture can be best understood from their natural mode of growth.

Nature has distributed our Ferns with a generous hand, and when required for the flowerless nook or shaded bank, they can be found in abundance in every locality. One only *Adiantum pedatum*, the Maiden Hair Fern, need be particularly mentioned, because it is not known and appreciated as it deserves. It grows about a foot high, and its black shining stems, forked fronds and recurved branches, present a simple grace of outline and elegance of form that are unsurpassed in beauty. It flourishes in rich soil with good drainage and plenty of moisture, and does well in shade or not too strong sun.

Some of our native plants that do best in ordinary cultivation may be noticed in brief detail:

Achillea millefolium Yarrow or Milfoil, has white and purple flowered forms, very common and not of much value; but the rose-colored form *(roseum)* is a jewelled beauty, its heads of flowers going well with the fern-like foliage. It is in bloom for two months, but is, like most of the Achilleas, inclined to spread.

Anemone nemorosa, Wood Anemone, grows not more than 6 inches high and blooms in May. Flowers white, tinged with purple, leaves dissected, trifoliate. There is a red flowered variety which is very attractive.

Anemone Pennsylvanica or *dichotoma*, Pennsylvanian Anemone, grows in low meadows, about 18 inches high and often flowers from June till September. It has showy, pure white flowers, held above the foliage, and does well in shade.

Aquilegia Canadensis, Canada columbine or wild honeysuckle, one of the best of the columbines, 1 to 2 ft. high, has brilliant scarlet and yellow flowers in May and June, and is sure to please the most fastidious.

Asters are autumn-flowering. We have about 20 varieties; *lævis*, *multiflorus*, and *novæ angliæ* being among the best. They may be grown separately or in masses, and are very showy late in the season when other flowers are scarce.

Asclepias tuberosa, Butterfly Weed or Pleurisy Root, blooms from July to September, is about 2 ft. in height, has broad foliage and showy heads of deep orange or orange-yellow flowers, and will adorn the most select border. *Asclepias incarnata*, Swamp Milkweed, July and August, 2 or 3 ft high, grows in wet places, and has showy rose-purple flowers, the lighter colored hooded bodies above contrasting beautifully with the darker colored petals below. *Asclepias cornuti* is the well-known milkweed.

Chrysanthemum leucanthemum, Ox-eye daisy, Field daisy or White Weed, although so common a weed, is a fine flower, and well worth cultivation.

Cimicifuga racemosa, Black Snake-root, July and August, 3 ft., is a tall and strong growing plant, with foliage like the Bleeding Heart, but lighter in color. The flowers are pure white, arranged on spikes sometimes two feet long.

Claytonia Virginica, Spring Beauty, May, 4 in., has two narrow opposite leaves, and a loose raceme of rose-colored flowers with dark veins. The stem springs from a small tube often deeply hid under tree roots, which makes it difficult to transplant.

Epigæa repens, Trailing Arbutus or Mayflower, is a pretty little trailing evergreen with very fragrant white or pink flowers in spring. It is difficult to transplant, but it is claimed that it can be grown if taken up with a good ball of roots, and planted in a shady place, in good soil not containing lime and well mixed with leaf mould. *Gaultheria procumbens*, Wintergreen and *Mitchella repens*, Partridge Berry are also trailing plants that may be ornamental under suitable conditions.

Epilobium augustifolium, Willow Herb, French Willow, or Rose Bay, July and August, 3 to 5 ft., has willow-like leaves, and branches at the top, bearing long spikes of lilac-purple flowers. It is very handsome and easily grown.

Erythronium Americanum, Adder's Tongue or Dog's Tooth violet, May, has a bulb usually about 6 inches deep in the ground, two blotched leaves and drooping yellow flowers.

Euphorbia corollata, Flowering Spurge, July and August, 2 to 3 ft, is a branching plant, with smooth leaves and pure white petal like bracts around the true flower.

Geranium maculatum, Wild Cranesbill, May and June, 1 ft., is a branching plant with large palmate leaves and purple flowers an inch across. *Geranium Robertianum*, Herb Robert or Bird's Eye, June to October, is a pretty little biennial, with finely-divided, strong-smelling, hairy leaves, red stems and reddish purple flowers. Easily transplanted and a good edging plant.

Hepatica triloba, Liver Leaf, May, 6 in., has flowers varying from pure white to all shades of pink and purple, which open before the new leaves appear. It comes in with the crocuses and improves with cultivation, and where it has been grown for several years, new plants spring up from self-sown seeds.

Lilium Canadense, Wild Meadow Lily, July, 2 to 4 ft., grows in wet meadows, and has orange flowers spotted with brown inside and recurved petals. There is a red flowed variety which is very neat and attractive.

Lobelia cardinalis, Cardinal Flower, August and September, 2 to 4 ft., has smooth stems and superb nobbing racemes of intensely brilliant red flowers. It will flourish in the garden or in shallow water. *Lobelia syphilitica*, Great Blue Lobelia, July, 2 to 4 ft., is a coarse plant with large leaves and large, dense spikes of light blue flowers.

Lupinus perennis, Blue Lupine, May and June, 1 to 2 ft., has palmate leaves on long stems and long spikes of showy flowers, which are pea shaped and of various shades of color—blue, purple, pink and white. It does best in sandy soil.

Monarda didyma, Oswego Tea, July to September, 2 ft, is fine for massing, and its brilliancy of color and profusion of flowers throughout the summer, make it invaluable for the border. It has aromatic foliage and showy heads of bright scarlet flowers.

Myosotis palustris var. *laxa*, Forget-me-not, May to August, 1 ft., grows in moist woods or swamps, has pale blue flowers with yellow centre, and is almost identical with the cultivated plant.

Orchids include many plants of great beauty, and would require large space and special knowledge to treat of properly. Among them are *Orchis spectabilis*, Showy Orchis and different species of *Habernaria*, *Goodyeara* and *Cypripedium*. *Cypripedium spectabilis*, Queen or Showy Lady's Slipper, is one of the most beautiful of all Orchids. Some of them are fine for winter flowering, and most of them do well outside, planted in swamp muck and kept rather moist.

Pentstemon pubescens, Hairy Pentstemon or Beard Tongue, June, 1 to 2 ft., grows in clumps on sandy hills and dlains, and has long racemes of bluish-purple and white, snapdragon-shaped flowers. Pretty and easily grown.

Phlox divaricata or *Canadense*, Spreading or Wood Phlox. May, 1 to 2 ft. grows in rich woods, transplants very easily and makes one of the brightest flowers in the border, the clumps increasing in size and beauty under cultivation. The flowers are lilac or bluish, in a spreading, loosely-flowered cyme, and the stems, which are prostrate in winter and early spring, become erect before flowering.

Rudbeckia hirta, Rough Cone Flower or Black-eyed Susan, July to September, 2 to 3 ft., although a little coarse to some tastes, makes an excellent border plant. It has long stalked flower heads, with conical, purplish-brown disks and bright yellow rays. It may be transplanted even when in flower, and is increased by division or by new plants, which spring up freely from self-sown seeds.

Rudbeckia laciniata, Cut-leaved Cone Flower, July and August, 3 to 6 ft., has divided foliage and broad heads of showy lemon-yellow flowers with drooping rays and greenish-yellow disks. It is the parent of the deservedly popular "Golden Glow Rudbeckia."

Smilacina racemosa, False Spikenard or Clustered Solomon's Seal, May and June, 1½ to 4 ft., grows in rich woods and has gracefully recurved stems two rows of large, oval, green leaves and a large compound raceme of small fragrant white flowers, succeeded by red berries specked with purple. It is quite showy and suitable for cut flowers or forcing. *Smilacina bifolia (Maianthemum Canadense)*, Wild Lily of the Valley, has two leaves and a simple raceme of white flowers and *Polygonatum biflorum*, Smaller Solomon's Seal, has a recurved stem, two rows of smooth

glossy leaves and auxillary flowers usually in pairs.

Solidago, Golden Rod has a large number of varieties, the yellow flowers of which appear in summer and autumn. They range in height from six inches to 6 feet, and present considerable variations in foliage and flowers. They are very brilliant, "like flaming swords of fire," and are useful for cutting. The fine hairs of some of them irritate the skin, which probably accounts for their being mistakenly considered poisonous.

Tiarella cordifolia, Foam Flower, False Mitre-Wort, May, 6-12 in., is very pretty, with maple-like radical leaves and scapes with racemes of white, star-shaped flowers. It is fine in masses and is said to be good for forcing.

Trillium, Wood Lily, Wake Robin, May, 1 ft., has a tuberous root, three leaves and a single flower with the parts in three's. There are several varieties with white to purple flowers. They are very attractive in the border and easily grown. The shoots come up rather late in spring with the flower bud already formed. It soon opens and after flowering they die away, so that they may be easily lost in digging the border.

Vicia cracca, Tufted Vetch, July, 1½ ft., is a pretty clinging plant with pinnate leaves of 20 to 24 leaflets, and the leaf stable prolonged into a tendril. The flowers are blue turning to purple, in a dense, one-sided raceme.

Viola, Violet, has many varieties, among which *Violet blanda*, Sweet White Violet, *Viola palmata*, Common Blue Violet and *Viola pubescens*, Downy Yellow Violet are well known spring bloomers, easily grown and attractive.

Viola Canadensis, Canada Violet is particularly valuable. It is a stemmed violet, about a foot high and flowers most of the summer. The petals are purple outside and white within and it has heart-shaped, pointed leaves.

CHAS. Y. MOORE

Brampton Ont.

DAFFODILS FOR POTS.—There are a hundred varieties of daffodils good enough and distinct enough to grow and flower in pots, and their cultivation is of the very simplest. Pot them up, four, five, six or more bulbs in a pot, according to size, during August or September, and stand them in any convenient spot. They need not necessarily be kept covered nor darkened, as they will fill the pots with roots in any case. Place the lot which is to flower first in a temperature of fifty-five to sixty degrees early in December, and they will open during January, while by moving other batches in succession, the display may be kept up for three or four months, and it never need be monotonous if a wise selection is made and every batch consists of a different variety.—Garden and Farm.

HERACLEUM GIGANTEUM.

FIG. 1406.—HERACLEUM GIGANTEUM.

COMPLYING with the request of several members of the Horticultural Society here, and Chief Gardener Cameron of the N. F. Park, I enclose to you a "Photo." of a very attractive *Herbaceous Plant* now flourishing in front of "All Saints' Church" Sunday School House.

The seed of the plant was brought by Mrs. Bull about seven years ago from Shropshire, England, where she had noticed it growing vigorously on grounds attached to the residence of a relative. The plant which we have now has been slow in its first stages of growth, but since last spring its growth has been surprising; the measurement is correctly given in Mr. Cameron's account.

GEO. A. BULL.

Niagara Falls South, Ont.,
July 5th, 1898.

I also enclose Mr. Cameron's note, as follows :—

Heracleum Giganteum, the old Greek name of the plant; so called in honour of Heracles or Hercules. Cow Parsley; or Cow Parsnip. Umbelliferæ, or Parsley Family. A genus comprising about seventy species of strong coarse-growing hardy biennial or perennial herbs, from the mountains of Central and Southern Europe and especially Asia, with a single North America variety; flowers white, the petals of the outer ones of each umbel larger. Leaves dissected with large segments, although long known to cultivation. Heracleums are not possessed of any great special recommendations. They are best adapted for growing in shrubberies, rough parts of pleasure grounds or on the margins of water, being too coarse for the flower garden. They succeed in any kind of soil Increased by seeds or by divisions. The specimen before us is a noble looking plant, tropical in appearance, with its large white umbels many rayed pinnatified, deeply toothed. Stem eight feet high; length of leaf from the stem, five feet four and a half inches; width of leaf, three feet nine inches; width of plant, eight feet ten inches; circumference of stem at base, ten inches; circumference plant around the tips of the leaves at the base of the plant, twenty-seven feet.

This species named above first came from the Caucasus to England in 1820, where it has of late years been very extensively cultivated on account of its large size and commanding appearance.

RODERICK CAMERON.

CULTURE OF OUT-DOOR ROSES.

THE adaptability of the rose to all parts of this country, its beauty of form and color, and its delightful fragrance, make it the favorite flower with all classes. I hope to see the day when rose exhibitions in June will be as popular as the chrysanthemum shows in November. In England rose exhibitions are very popular during the summer, and are well patronized by the public; I see no reason why we could not make creditable exhibitions here. The cut flower roses are unequalled and they may be procured in all the middle and northern parts of the country from June to November and for a longer period at the south.

To grow roses successfully, a rich soil must be provided, a heavy, rather stiff yellow loam being the best, and which should be well drained. If the soil is not of this nature, it should be removed to the depth of one and one-half feet and filled in with three-fourths good loam from an old pasture and one-fourth well rotted cow manure, well mixed.

The rose bed should be exposed to the full sun from morning till night; don't attempt or expect to grow good roses under the shade of trees or near enough for their roots to come in contact with the bed. I never like to plant rose bushes nearer than twenty or thirty feet to shade trees, for if they are planted much closer the roots of the trees will surely take from the soil that which is beneficial to the rose.

If it is not convenient to have a rose bed, the plants may be grown singly on the lawn, or a row may be planted along a driveway or walk. When so planted, dig out a piece of sod about fifteen inches in diameter, and make a hole about the same depth; prepare it as described above for a bed. In this way the plants should stand about four feet apart. If immediate effect is desired, or blooms from spring until frost the first year, good strong two or three year old plants should be procured and set as early as the soil can be put in condition in the spring, although I have seen plants do well planted as late as June 15th, but planted this late they must be pot grown. Be sure to firm the plants well in the soil and water thoroughly after planting.

As to varieties, we have many that are very beautiful, monthly bloomers and hardy in this section. If I were confined to but six varieties, I should name the following in their order: Kaiserin Augusta Victoria, creamy white; Madame Caroline Testout, beautiful satin pink; Meteor, crimson; Clothilde Soupert, white, shaded pink; Belle Siebrecht, dark pink; American Beauty, rose. However, there are many other varieties that should be in every collection of any extent, such as Souvenir de Wootton, La France, President Carnot, and several other Hybrid Teas. President Carnot is a new rose of decided merit, and I have every reason to believe it will rank with our very best roses for out-door culture; the color is a delicate shade of pink that would delight the heart of anyone; its long pointed buds, and handsome, strong foliage make it one of our most valuable roses.

Climbing roses should not be neglected, for there are places round every suburban home where such climbers can be used to advantage. The Crimson Rambler is perhaps the finest and most showy climbing rose to date, and should be planted wherever a climbing plant is needed. A strong two or three

year old Crimson Rambler in full bloom is a sight long to be remembered.

One of the most troublesome pests of the rose is the "rose-slug"; the best remedy I have found is to dust the plants with powdered white hellebore, in the morning when the dew is on; or if no dew, first spray the leaves and then apply the powder. Another troublesome insect is the green fly, which usually attacks the young growing shoots, and is easily prevented by the use of tobacco dust, which should be dusted over the plants once or twice a week; however, it would be best to make both these applications before the insects appear. In very dry weather the plants should be thoroughly watered two or three times a week, and hoed at least once a week. Never allow the soil to bake or become hard; the surface should be kept loose at all times.—Vick's Mag.

PANSIES.

THERE is lots of pleasure in store for those who have never owned and studied a pansy bed; and even more for those who know just how much joy is in such a possession.

If you have a hotbed, sow pansy seed there in August. Transplant until they are five or six inches apart. Protect with mats on outside and paper on inside during cold weather; or, instead of paper, give a light covering of leaves, which, to be an ideal covering, should not be packed closely. Give air and light on warm, sunny days. Very early in spring the protection may be removed, and if carefully watered and sheltered from the noontide sun, the pansies will soon be blooming. As soon as the frost is out of the ground they may be transplanted to the garden. Make the bed rich with old, fine, stable manure (preferably from the cow stable). Give them a sunny situation I say, with all deference to writers who say pansies need a shady position. Mulch the pansy bed with chip dirt, chopped hay, lawn clippings, fine manure from the bottom of the heap,—or better than anything else, if you can get it, is wood's earth or leafmold. A good mulch and plenty of water, and we have no sunshine that will hurt the pansies. They bloom earlier in spring and remain in bloom later in fall in a sunny situation, but possibly a sheltered bed would give more and larger blooms in mid-summer. —Vicks' Magazine.

IMPROVED KEROSENE EMULSION.—One of the best emulsions for use in the greenhouse or window on plants affected with aphis, scale and mealy-bug is prepared by adding one part of fir tree oil to five parts of kerosene and diluting the mixture with water, according to the insect to be fought. For scale and mealy-bug, use 20 parts of water to one of the mixture, syringing it all over the plants infested. For green and black aphis, use 40 parts water. To produce a thorough union of the oils and water, put them in a pail and mix well with a syringe for a moment. Some florists who have used it think it cures and prevents mildew. It is preferable to the old kerosene emulsion in which a portion of slightly sour milk was used because it can be prepared with so much less trouble.

The Canadian Horticulturist

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

Notes and Comments.

PLANT LICE.—These insects have been very troublesome this season, especially in the cherry trees. Not only have they stunted the tree growth, but they have also lessened the fruit growth, causing the cherries to mature irregularly, and to be of smaller size than usual. This pest is becoming so serious that some means must be taken to destroy it. We used kerosene emulsion this season, but, while it killed the aphis, the second and third application seemed to burn the foliage very severely. We are glad to notice that whale oil soap, one pound to seven gallons of water, has been proved to be equally effective, and not injurious to the foliage. Not all the whale oil soap sold is of good quality, and in the purchase the greatest care must be observed to secure the best grades.

CURCULIO IN CHERRIES.—Never before have we seen the curculio to be so troublesome in the cherry as this season. Between this insect and the aphis, which has been so abundant as to cause the fruit to ripen most irregularly, the cherry crop has proved almost worthless. The larva of the curculio is not a very attractive morsel, but it is hard to find any cherries free from them. Not like the plums, the stung cherry does not fall to the ground but continues until maturity, and overgrows the crescent mark so that it can scarcely be detected as a wormy cherry without breaking it open.

THE NORTH STAR Currant has done better this season than previously. The branch is very healthy and vigorous, and an abundant bearer of fair-sized fruit of good flavor; much more agreeable to

the taste than the Cherry, to which however, it is inferior in size.

NETTING is suggested by American gardening as a useful covering for gooseberry bushes in July, to give partial shade.

THE IRONMONGER and the RED WARRINGTON are the only two among about twenty-five English varieties, that have been found mildew proof at Maplehurst this season.

ENGLISH GOOSEBERRIES seems to succeed every year with Mr. A. Morton, of Wingham, who has just sent us a quart each of seven English varieties, that do him great credit. Among them were Duke of Sutherland, ONE of Them, Two to One, Crown Bob, Catharina and Whitesmith.

THE PEARL GOOSEBERRY succeeds admirably with Mr. Thomas Beall, of Lindsay, who sends a fine sample, most of them measuring about one inch in diameter. A branch enclosed also shews how wonderfully productive this variety is.

THE INDUSTRY succeeds well in the garden of Mr. E. J. Wolverton, Grimsby; ripening about July 16th. The bush seems vigorous and carries a heavy load.

BIG STRAWBERRIES.—The Strawberry Culturist gives the following instructions for growing strawberries such that from 22 to 20 will fill a quart basket:

Use 20 tons stable manure, 50 bushels wood ashes, one ton bone fertilizer per acre thoroughly worked in the ground. Give twice the usual amount of cultivation and plant Glen Mary, Enormous, Marshall and Mary: Don't let them get too thick and if the season is at all favorable you will get the kind of berries you are looking for.

ASPARAGUS does not pay when poorly managed, but a writer in Farm and Fireside thinks there is money in it for the man who handles it well. We quote a paragraph:

The general asparagus market is never overstocked, and there is always a demand for crisp, well-washed and neatly bunched shoots. Small, woody stems will not sell for any price, and dirty poorly bunched stalks are not wanted, even though the quality may be excellent. We usually cut in the morning, wash in a tub partly filled with pure water, and tie with new white twine in bunches of two pounds or more. The stems should be arranged neatly, and the bunch be tied so that it will look enticing to the prospective customer. If any of the details are neglected or forgotten the sale will be affected thereby.

Question Drawer.

Heater for Greenhouse.

1020.—Can you give me the address of the Hitchings & Co., who manufacture the Domestic Water Heater, recommended by the man who wrote the description of the amateur's greenhouse on p. 20 No. 1., Vol. xix. of the Canadian Horticulturist? If you cannot, can you tell me where to get a heater that would heat a thousand (1,000) feet air space—the temperature falling sometimes as low as 40°. If you will answer this through your valuable Journal, I shall be very much obliged.

Yours sincerely,
PERCY P. FARMER.

Arnprior.

Hitching's Domestic Water Heater is made by Hitching's & Co., 233 Mercer St., New York. It will probably answer as well as any for the purpose named.

There is also, Ibelieve, a small sized Daisy heater, made at Toronto, but without more data I cannot tell the size that will be required as it depends upon the area of exposed glass rather than the cubic air space. The radiation required will be about the one half the glass area.

L. R. TAFT,
Agricultural College, Michigan.

Small Fruits at Gravenhurst.

1021. SIR,—Strawberries have borne a splendid crop, one-third of an acre yielding 930 quarts, averaging 6½ cents each, with a very rapid sale. Indeed, I was not able to supply the demand. Currants are good; red and white ones bring 7½ cents, and black 12½. The only trouble is that there are not enough home-grown fruits, for these are so much fresher than those brought from a distance.

Could you recommend a good late variety of strawberry, and also a good early kind. We have Jessie, Crescent, Logan and Wilson, and would like new kinds bearing large berries.

JESSIE PARKER, *Gravenhurst.*

Reply by Prof. H. L. Hutt, Agricultural College, Guelph, Ont.

Such reports are encouraging, and quite different from those received from many of the older fruit sections, where the supply is far in excess of the demand, and the cost of transportation eats up all the profits when it is sent to a distant market. Where it can be obtained there is no market like the home market for the small and soft fruits. At anything like the prices mentioned there is money in growing small fruits, and the northern growers who first go into it in a business-like way to supply this home demand, will have a little Klondike of their own.

The varieties of strawberries you mention have never made any great records for themselves here, or at least we have had many other varieties which have far excelled them. As one of our leading early varieties I would mention Van Deman. Sadie, a new variety, beat it this year, but for an average of three years Van Deman heads the list for earliness. Warfield comes in a few days later, and usually holds out much longer. It ranks eighth for total yield among 220 varieties fruited this year, and averages second among 85 varieties grown for three years. Saunders, Tennessee, Prolific, Haverland and Clyde, are all heavy-yielding, excellent, midseason varieties. The latter stands second on the list this year for total yield, and has certainly proved itself worthy of all the high compliments paid to it. Stone's Early heads the list this year, and also for an average of three years as the most productive berry, but as it so seriously lacks size and firmness we cannot recommend it. Edgar Queen has also made a great record for itself. For total yield it ranks third among the 220 varieties grown this year, and averages third among the 85 varieties grown for three years, and it heads the list this year and for an average of three years for the largest late yield. Its worst fault is a lack of firmness, which might also be said of Dominion, another heavy-yielding, late variety, which in most respects is superior to Edgar Queen.

Ever-blooming Hardy Rose?

1022. SIR,—Is there such a thing as a really ever-blooming hardy rose? A rose that will stand the Canadian winter, when protected, and give flowers all through the summer and autumn months? I had the Hybrid Tea Rose, La France, but it only made an effort to flower a second time, too late to escape frost.

A friend of mine has what she believes to be a Bourbon Rose, but it flowers only once in early summer. The small Parquerette (Polyantha) is an ever-bloomer of a kind, giving a few flowers after the usual early bloom. Are the "Hybrid Perpetuals" more satisfactory? They bloom only once, but do the more tender and difficult "Ever-bloomers" repay the amateur for the extra trouble that they give. Hybrid perpetuals require protection here (Mount Forest). Would the semi-hardy kinds succeed at all, even with protection, in the cooler parts of Canada, say, between Lat. 43° and 44°? If any successful rose-grower can give the desired information I shall be much obliged.

W. E. BROOKS, *Mount Forest, Ont.*

A Budget of Questions.

SIR,—An answer to the following questions much through your valuable magazine, will oblige an old subscriber and

AMATEUR GARDENER.

1. The best 20 hardy roses, everything considered?

2. The best doz. hardy roses, autumn bloomers?

3. The best doz. hardy roses, color darker than rose?

4. The best doz. highly perfumed?

5. The best Hybrid Teas, worthy of garden culture (with slight protection.)

6. The best hardy climbing roses.

7. The best half-hardy, with perfume?

8. The best hybrids of Rosa Rugosa?

In answer to Question 1, state which roses are better on their own roots than budded.

9. The best soil and aspect for manner of propagation of out-door hardy Carnations?

10. The best three clamatis for veranda?

FRUIT CROP REPORT.

ESSEX CO.—A. McNeill.—Fruit prospects in Essex are practically unchanged. Apples—Baldwins and Greenings, good. No Spys, pears good, peaches good, plums, full crop, grapes, very good.

MIDDLESEX AND PERTH CO.—T. H. Race.—Fruit crop not so promising as a month ago. Early and fall apples, good. Some winter varieties good; Spies, very poor; Early pears, good; late pears, poor; plums, good to extra good.

SIMCOE CO.—G. C. Caston.—Early apples, very good; fall apples, good; winter apples, poor; pears, very good; plums, very good, but suffering from drouth.

DURHAM CO.—E. C. Beman—The prospects are decidedly poorer than when last report was sent. The long-continued drouth has caused much of the fruit to drop, especially apples and plums. Pears and grapes are not so much damaged; apples will be a very poor crop; pears, fair to good; plums, very poor; grapes, good.

LINCOLN CO.—A. M. Smith.—Peaches, very poor; apples, poor; pears, good; plums, good; grapes, very good.

OXFORD CO.—J. S. Scarff—Winter apples, only fair; fall apples, good; pears, good; peaches, good; plums, good, but dropping; cherries, poor; grapes, good.

HURON—J. A. Morton.—The prospect for fruit is good; in some sections very good.

PRINCE EDWARD CO.—W. H. Dempsey.—The prospect for fruit of all kinds is growing less every day, owing to the drouth. Apples very poor, pears poor, plums good, raspberries dried up.

WENTWORTH CO—M. Pettit.—Apples poor, pears fair, plums good, grapes good. Considerable scab on pears and apples.

FRONTENAC CO.—Geo. Nicol.—Fall apples good, winter apples poor, small fruits very good

VICTORIA CO.—Thomas Beall.—The fruit prospect has changed very much since last report. Apples fair, pears very good (fungus checked), plums very good, grapes fair.

HURON CO.—A. E. Sherrington.—Apples poor (except Duchess, which is good), pears poor, plums fair, cherries fair.

OTTAWA—R. B. Whyte.—There has been no change in the fruit prospects since last month's report, except in gooseberries. The great heat of two weeks ago scalded the berries so badly that great numbers of them dropped. Fungus diseases do not appear to be prevalent this year. There is no sign of gooseberry mildew, nor plum blight, no apple scab nor grape rot; so my favorable report of last month bids fair to hold good for the season.

LEAMINGTON—W. W. Hilborn.—The prospect for the peach crop has changed somewhat. Young trees dropped most of their fruit; trees that have been planted five or more years have from nothing to a full crop, and will average from fair to good; under that age, poor. Other fruits have not materially changed.

GRENVILLE CO.—H. Jones.—Apples poor, pears good, grapes good, plums fair. Apples are the only fruit grown to any extent in this county, and the conditions are far from encouraging. In unsprayed orchards, there will not be more than an average of one bushel to the tree, in orchards of 15 years of age and over, fruit will be undersized and spotted. In sprayed orchards, the crops will probably be one brl. per tree, or more, and from 60% to 75% clean. On light gravelly soils, the fruit is dropping badly, but on loams they are holding well. In my July report, "Green apple worm" should read "Green aphis."

DUNDAS CO.—W. A. Whitney. — Apples fair in quantity, very good in quality. The prospect is that the crop will be three times as valuable as last year. Plums very good pears very good, grapes good; very few grown for market, although most kinds do well if laid down in winter. We predict good prices for Snow apples, which is our main crop.

Open Letters.

The Late Richard Trotter.

SIR,—It is with sincere regret that I note the announcement of the death of Mr. Richard Trotter, of Owen Sound, Ont. For a period of six years Mr. Trotter was one of my most valued correspondents, and a very reliable source of information regarding plum growing. The Experimental Farm was the recipient of several packages of scions of plums, representing varieties which were the product of his own labor and intelligent perseverance. One of these received in 1892 has proved to be one of the hardiest of the Domestica class. Another at Ottawa described in the Report of the HORTICULTURIST for 1894 has fruited as a top graft on Prunus Americana at the Central Farm. It appeared to me to be a variety possessing many excellent qualities and entirely worthy of extended trial. Mr. Trotter said that this latter was from the seed of Evelyn, a local seedling, crossed with Fellemberg. The tree is a strong grower with thick healthy leaves. A description of the fruit is as follows, taken from the Report of 1894, namely:—"John A." Fruit: large, oblong, sometimes egg-shaped, slightly flattened laterally. Color, a dark bronzy red with a brighter flush near calyx; bloom heavy purplish blue; suture deeply marked; cavity one sided with prominent swollen lip on side opposite suture. Stem 1¼ inches long, stout. Flesh greenish yellow, firm and juicy; a pleasant sub-acid. Pit large semi-circling. The prune characteristics are strongly marked. Keeps well. Season Sept. 10 to 20th or later.

I speak specifically of this variety for the purpose of directing attention to the life work of public service rendered by Mr. Trotter, and with the hope that the good he has done may by being brought to the notice of his Canadian fruit growing brethren, live after him in the fullest meaning of the phrase.

JOHN CRAIG.

Ithaca, N. Y., June 20, 1898.

Peach Curl.

SIR,—A gentleman here had several trees afflicted last year; his wife said her father had used a mulching or dressing of wood ashes with success in the disease, so he tried this treatment. Result—No curl on his trees, but those in next yard were very badly infected. Only an isolated case which may be due to something else, but I mention it to excite criticism.

J. M. DICKSON, *Hamilton.*

Notes on Fruit Crop.

SIR,—Small fruit here is a short crop, and rather poor in quality. Strawberries failed to root last year, but what fruit was got was good. Raspberries are drying up. Gooseberries, currants and cherries are small, the latter little more than skin and stone. Ostheim was in first here and the finest of any I have seen.

Gooseberries got such a scorching last year with mildew that they bloomed very sparingly this spring but set well. Some varieties were killed in the ground last winter. Champion suffered worst in this respect, and I never saw a dead twig on this variety before.

Quite half the fruit has fallen during the last three weeks. When closely examined, the small grub is to be found in every berry.

Bushes have made a fine growth this season. What few plum trees we have in this section are well loaded. Winter apples are a light crop. The Duchess is loaded everywhere.

S. SPILLETT, *Nantyr.*

THE SUMMER DOYENNE.

THE
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THE SUMMER DOYENNE.

OUR frontispiece represents the earliest of our summer pears, and one which should be in the garden of every fruit lover in our country. Too small in size to be very profitable for the commercial orchard, this fault is no objection for table use, for which its excellent quality makes it a decided acquisition. If we had our markets to ourselves as we had in days gone by, no doubt we could sell a small pear with profit, but now we get California Bartletts in the early part of our pear season, and nobody will buy small pears when they can buy large ones.

The fact is that conditions have completely changed, until seasons and distances have been almost completely overcome; and these matters must be considered in planting a commercial orchard. For home use, however, the question has a different aspect. We can never buy fruit from California or any other other country to equal our choice high-flavored varieties grown in our own gardens.

The Summer Doyenne is not a new variety. It was originated in Belgium in 1823, by Dr. Van Mons, a nursery man, who devoted much time to the origination of new varieties, and who had at that time no less than 2,000 valuable seedlings of pears. It is known in different countries under slightly different names. In England it is called Summer Doyenne; in France, Doyenne de Juillet; in the United States, Doyenne d'Ete; and we choose the first because it seems to us advisable to avoid foreign names where possible, seeing they are so commonly mispronounced.

The tree is a vigorous, healthy grower, with somewhat slender branches, which are light, yellowish brown in color. It begins bearing at an early age, dwarf trees at Maplehurst two years planted having some fine clusters of fruit. The fruit measures about 1¾

inches long by 2 inches broad, and is roundish, obovate in form ; color, lemon yellow with a brownish red cheek. The flesh is white, of fine texture, juicy, and of a sweet, pleasant, aromatic flavor.

The tree is of course perfectly hardy in Southern Ontario, but has been reported only half hardy in Huron and Bruce.

FRUIT GROWING IN ALGOMA.

FIG. 1407.—THE ATLANTIC.

A SHORT time ago we had occasion to go through the Algoma district in order to ascertain its adaptability to the cultivation of fruit. Numerous tourists took the train at Toronto for Collingwood, where the steamer "Atlantic" awaited us. The voyage north to Parry Sound began to reveal the charms of a trip through the Georgian Bay and Lake Huron with their 30,000 islands to give constant change of scenery. Christian Island was the first large island, having an area of 1,000 acres. It is an Indian reserve, the only white people permitted to live on it being the light house keeper and his friends. A signal from our captain at this point brought out two or three boats to take off several visitors, with their wheels. Soon after we passed *Lone Rock* the latter having been a most dangerous place, previous to the placing here of a fog bell and light, to indicate the locality. The rock juts two or three feet above water, and on it the steamer "Wabuno" was wrecked some years ago.

FIG. 1408.—WOMEN ROWING.

Passing around Parry Island we entered Parry Harbour amid beautiful scenery on either side, while two islands called *The Two Sisters* seem to guard the entrance. Parry Sound itself, though pretty from the river, is but a slow place if you except the lumber trade, and the tourists who put up at the summer hotel. The roads and sidewalks are very poor, yet we found the inhabitants up to date enough to cry out "$5 fine," when we attempted to ride our wheels upon their rickety sidewalk.

Depot Harbor near to Parry Sound is the terminus of the Canada Atlantic Railway, which carries the products of the great west through to the great markets of the Atlantic.

The River Magnetawan, in which

FIG. 1409.—BYNG INLET.

Byng Inlet is situated, was full of pretty scenery the entrance to which is shown in fig. 1409.

FIG. 1410.—MANITOWANING.

FIG. 1411.—AT KILLARNEY.

Along the shore you see here and there the squatter's cabin, with his row or sail boat, his only means of transportation, and in some cases a fine potato or other root crop, near at hand. A poor lonesome kind of a life it must be, but infinitely better than living in poverty in one of our great cities, when there are thousands of acres of good land waiting for occupation here in Algoma at 20 cents an acre.

At Killarney we were interested in the numerous Indians and Half-breeds who occupy this section. This is the first landing place on the North shore

FIG. 1412.—VIEW AT LITTLE CURRENT.

of Lake Huron, and the views are most interesting because of the many islands which here abound.

The fishing and the boating at Killarney are very good, and many yachting parties pass through the narrows at this place, by which you enter into the North channel between the Manitoulin Island and the North Shore.

Manitoulin Island is about 150 miles long, and has some fine agricultural sections, especially that about Manitowaning and *Gore Bay*, which latter is beautifully situated. Here we saw the Kentish cherry tree growing vigorously, also saw plum and apple trees. We were told that the climate averages at least 12 degrees milder than on the north shore, and that it was well adapted for growing hardy apples.

After about 500 miles of sailing, we reached Richards' Landing, and spent two days and a half on St. Joseph's Island, in order to study its capabilities for growing fruit. Almost every orchard we could hear of was visited, and inquiries made regarding its success. Mr. Charles Young, of Richards' Landing, showed us some fine trees of Wealthy, Duchess, Alexander, Charlemov, Whitney, and other apples, heavily laden; Kentish and Richmond cherries; Janesville grapes, which he says ripen well;

FIG. 1413.—CHARLES YOUNG'S GARDEN.

red and black currants, gooseberries, strawberries, etc. These latter grow to perfection, even the old Jucunda being one of the favorites.

The forest tent caterpillar, *Clisiocampa sylvatica*, has been a great plague for two seasons, invading the orchards from the forests in such vast numbers, that Paris green was useless to hinder them from destroying the foliage of the apple trees, and Mr. Young found his only plan was

to put around his trees bands sticky with tar, and thus prevent the invading host from climbing up.

The view of Mr. Young's house shows Mr. Young himself in the foreground, a fine Ampelopsis Virginiana shades the veranda in front, and, on the side, a Clematis Virginiana. A fine flower garden in front contains sweet peas, roses, dahlias, gladioli, etc, and some fine shrubs, notably a large bush of Hydrangea paniculata grandiflora, six-

His farm slopes down to the river or west passage, the high way of the C. P. R. and other steamers, on which a hundred boats a day can easily be counted. In our engraving the near ground shows a portion of Mr. Raines' orchard of apple trees, his house and barn, and in the distance the river, and the Sailors' Encampment on the Michigan side, a most charming location. His soil was clay, and on the high ground certain varieties of apples were found doing well, as

FIG. 1414.—MR. YOUNG'S RESIDENCE.

teen years planted, which blooms annually yielding at least a wheelbarrow load of bloom.

Mr. Young's farm slopes toward the north channel of Lake Huron, and our view shows the portion intended for orchard, with a few young trees already growing upon it.

On the west side of the island, we visited the orchard of Mr. A. Raines, who was the first white man born on the island.

Charlemov, Duchess, Wealthy, Wolf River, Haas and Hyslop. He had several fine trees of the Kieffer pear, which had stood the climate for two winters. The Pin cherry, Prunus Pennsylvania, was growing freely about the house; indeed it is found everywhere throughout this Northern region.

On the South side of the island after driving over many miles of rough stony and corduroy roads, we visited the farm of Mr. Wm. Dunn, which overlook

FIG. 1415.—SKETCH OF MR. RAINES' ORCHARD AND HOUSE.

Mud lake. His father was an early settler, a grocer in Glasgow who, meeting with some reverses, determined to try his fortune in this new country. He settled on St. Joseph Island, and bringing with him a fondness for gardening he became a member of our Association, and planted a very considerable number of fruit trees and plants. Many of these had done well, until a few years ago when the old gentleman died and the son found the care of both farm and

FIG. 1416.—MR. EDDY'S ORCHARD AND HOME.

garden too much, so in consequence the latter was more or less neglected. Notwithstanding this his work has proved the possibility of growing fruit here, for he has produced fine samples of Alexander, Duchess, Wealthy, Transparent, Scott's Winter, Golden Russet, Wall bridge, Charlemov, Borsdorf and Pewaukee apples; Moore's Arctic and Lombard plums; Ostheim and Early Richmond cherries; Flemish Beauty pears, and Janesville, Lindley and Delaware grapes.

Among the places visited on the north-east side of the Island, was Mr. Eddy's, at Hilton, whose son attended the O. A. C. last winter. His home was prettily situated, overlooking the water, and he has a large farm, nearly 600 acres in all. His young two-year-old orchard appears to be in excellent condition; the varieties were—Wealthy, Golden Russet, Duchess, Wallbridge, Snow, Transparent, Longfield, Stark, and Ben Davis; in all about two hundred trees.

(To be continued.)

FRUIT IN WESTERN ONTARIO.

PEACH CURL AND SPRAYING, ETC.

SIR, — I have just returned from a three days' drive through the county, from Windsor south towards Amherstburg, then along the Lake Shore to Leamington, and back along the old gravel road. I visited a great many of the fruit growers around Kingsville, Ruthven and Leamington, and found the fruit crop very much as reported.

Pears are perhaps a little better than an average crop, and apples are good. Early peaches are a heavy crop and were being shipped freely. Late peaches only a moderate crop, but the quality will be excellent.

The Smock, Wager, Golden Drop, and a few others will have a heavy crop, Early Crawford, Longhurst, Oldmixon a medium crop.

It would be interesting to note the prevalence of effect of the leaf curl on different varieties of peaches. With me, on three-year-old trees, the Beer's Smock was the only kind affected. Undoubtedly there is a close connection between the curl and the crop. Those varieties badly affected have no peaches —only those exempt from the disease have a crop. There appears to be a fair degree of uniformity in the experience of different growers, with the same varieties. The Tyhurst, Late Crawford, Elberta, Champion, Stump - the - World, were badly affected; while the Early Crawford, Alexander, Smock, Lemon Cling and some others, were comparatively free.

One grower, whose name I cannot recall, claimed to have had his orchard quite free from the disease, as the result of early spraying with the Bordeaux mixture.

No doubt W. W. Hilborn could give some very interesting facts in this connection.

Yours truly,

A. MCNEILL.

Walkerville.

A FRIEND OF ONTARIO FRUIT GROWERS.

FIG. 1417.—C. C. JAMES, DEPARTMENT AGRICULTURE.

ALTHOUGH the name of Mr. C. C. James is not as prominently before the public as those who are in public office representing political parties, he is not the less worthy of honor, for upon him comes much of the hard office work which makes the Department of Agriculture so useful to the interests of the farming community.

At the last meeting of the Association, Mr. James was present to represent the Department, and get the views of fruit growers regarding the San José Scale Act. At our meeting at Orillia he gave a magnificent platform address on "The Higher Horticulture." In this address he paid a fine tribute to the fruit growing community, as being the upper 400 in agriculture and he emphasized the benefit to the country of our Association.

Estimating, for example, that we have ten million apple trees in our Province, and through the improved methods of growing, packing, and marketing, 10 cents per tree only were added, then you would have a million dollars' benefit to the Province. "And," said Mr. James, "is there any man here having

apple trees upon his farm, or in his garden, who has brought those trees to such perfection that he could not, by a little more skill, and a little more knowlege, add ten cents at least, to the value of the fruit annually produced upon them? Now, this Fruit Growers' Association, with a small grant from the Government—some $1800 in cash, together with the printing of their report—have banded themselves together that they may bring up the general condition of this fruit growing industry."

Mr. James is a native of Napanee, a graduate in 1883 from Victoria University. From 1883 to 1886 he was a master in the Cobourg Collegiate Institute, and from then till 1891, he held the position of Professor of Chemistry at the O. A. C., Guelph. In this latter year he was appointed Deputy Minister of Agriculture for the Province, a position which he still occupies.

SHIPPING RASPBERRIES TO BRITAIN.

ENGLISH packers import raspberries chiefly in kegs, with just enough sugar to preserve them. The Canadians who have taken up the idea, are packing them in ten-pound round tins. The experimental shipment will consist of five carloads.

It is to be hoped that the experiment will be a success. Canada produces many thousands of pails of wild raspberries, the kind wanted. The development of such an industry would leave thousands of dollars in the hands of farmers and country merchants. Those who have taken up land in new districts, where wild raspberries chiefly abound, will find them a most valuable source of income at a time when a few dollars are most needed.

It is unfortunate that we have not some native Canadians in our London offices, men who know something about our resources, men who have lived in and who have travelled about the Dominion, who have grown with the country.

It is in the interests of business men everywhere to keep up the agitation until a proper commercial agency is established, not to promote the sale of any manufacturer's special goods, but of our general products, like grain, flour, dairy and other produce. Of twelve articles grown on Canadian farms, Britain imports $600,000,000, of which Canada supplies but $57,000,000.—From The Canadian Grocer.

THE P. BARRY PEAR.

FIG. 1418.—SECTION P. BARRY PEAR.

THIS is another very promising new fruit, which we noticed, on page 56, Vol. XIX., a pear that is named in honor of the late lamented president of the Western New York Horticultural Society. Samples of this new pear were exhibited at the World's Fair in 1893, in May, having been kept over since 1892. It is a winter pear, ripening in April, very large in size, and when ripe orange yellow in color, with juicy, fined grained flesh of high flavor. Perhaps this will prove the very pear we want for export; a variety we can send to Great Britain without cold storage.

So late as August 3rd this present season, we received two samples of this pear from Mr. F W. Glen, of Brooklyn, and it is so fine a sample that we have photographed a section exact size to show our readers. At first we thought it like Beurre Clairgeau, kept over in cold storage, for it much resembled that variety in form and size. We have the first samples growing on our experimental plot this season, and will be able more fully to identify the variety,

and judge of its adaptability to our country when these ripen. Mr. Glen says :—

"I am sending you to-day two Patrick Barry pears, the finest I ever saw. They are even larger than the two I sent which went astray. I paid 40 cents for them. Please measure, weigh them, and have a full size drawing made of them for the HORTICULTURIST. It is a beautiful sample, in perfect condition, nine months after it was taken from the tree and transported 3,500 miles."

THE DARK AND THE BRIGHT SIDE OF FRUIT CULTURE.

SOME years ago, in an incidental discussion on Canadian fruit growing, a cynical friend—a layman as far as commercial horticulture is concerned—urged that the worst part of the business seemed to him to be the oscillation between the feast and the famine phases—"Either," he said, "you have a brobdignagian crop and prices are no good, or else prices are excellent and you have no crop to sell." There was more than a tinge of truth in his philosophizing, and if he could have seen the orchards in '97, and again this year, one could have pardoned him a chuckle of satisfaction at his own wisdom. Last year we cheerfully paid ten to fifteen cents per tree for taking off superfluous peaches; this year we would with greater cheerfulness have paid twice the amount to have stuck them on. The crop in this part of Ontario is eminently a sporadic one. Smith has a very respectable crop indeed, while Brown on the other side of the fence, with equal reason for expecting a crop, finds the fruit conspicuous by its absence. The thing is not always easy of explanation and Brown has to console himself by pointing out to the other fellow that the wicked flourish like a green bay tree.

The ideal state of things would of course be half a crop and good stiff prices, and it remains for us to create these conditions as nearly as possible by selection and extension of markets, by the reduction of too heavy crops by thinning, and generally by the practice of scientific horticultural methods. It is hard to say definitely whether climatic conditions, state of soil, or previous heavy cropping has most to do with producing empty orchards in any given season. One thing is positive, to wit—that plain, obvious causes, such as curled leaf, curculio and so on, largely contribute to bring about such a state of things. It is satisfactory in a way to know that the history of the 'curled leaf' fungus has been worked out, and that it has not only local habitation but a name as well. At the same time it is plainly a very difficult enemy to control, and though fairly good results have been obtained in Ohio and elsewhere by the 'Bordeaux' treatment, I cannot say that I have noticed any distinct benefit either with trees that were sprayed last year or this. If spraying is to do any good, it must certainly be not only thorough but very early, and it is possible that a late spraying this fall would materially assist in destroying the fungus. The disastrous work of the 'curled leaf' during May and June this year clearly established the fact that the question of varieties has a good deal

to do with the virulence or mildness of the attack. A careful examination of the trees at this Station was made when the disease was at its worst with the following results.

Slightly attacked. Early Rivers, Foster, Hale's Early, Wonderful, Wheatland, Garfield, Smock, Salway, Hyne's Surprise, Longhurst, Waterloo, Shumaker.

Badly attacked. Early Canada, Early Richmond, Hortense Rivers, Susquehanna, Conkling, Fitzgerald, Ostrander Late, Early Crawford.

Very bad. Yellow St. John, Tyhurst, Yellow Rareripe, Champion, Lord Palmerston, Early Barnard, Red Cheek Melocoton, Golden Drop, Troth's Early, Morris White, Crosby, Wager, Steven's Rareripe, Honest John, Stump, Late Crawford, Old Mixon, Jacque's Rare ripe, Elberta.

Three varieties of nectarines proved also strongly susceptible to the disease, viz., Early Violet, Boston and Downton.

A visitation of this kind is not an unmixed evil. In common with Pear Blight, San Jose' Scale, and a hundred other horticultural afflictions, it creates a widespread and a keen desire for a more accurate knowledge of the nature and development of these pests. I wouldn't go so so far as to say they are all blessings in disguise,—if it is so, the disguise is very effectual—but the prevalence of these fungous insect enemies is undoubtedly leading to improved and more intelligent horticultural methods.

MARTIN BURRELL.

St. Catharines.

DWARF PEARS.

FOR amateurs who desire to obtain from a garden of rich loamy soil some of the handsomest and richest fruits that it is possible to grow in a Northern climate, dwarf pears offer alluring chances. They require a strong soil, such as will grow wheat or cabbage well, and it must never be deficient in moisture, and never subjected to extremes of cold, or rather of severe alternations of freezing and thawing. But both these requirements are met by a good mulch over the whole surface. Only a few sorts of pear endure well on the quince, and of these Louise Bonne does probably the best. The beautiful Boussock and Duchess come to their fullest excellence on this stock. All bear at an earlier age than if on pear roots, but they are also much less long lived.

As with dwarf apples, the fruit is larger, juicier and higher colored, owing to the more abundant supply of sap from the greater number of feeding roots, and the short distance to the digesting leaves. It is a convenience and satisfaction to the owner who likes to keep his trees in well-balanced shape that the entire growth is within arm's reach. As the fruit on large standard trees is often finer in the very top than on side branches below, it may seem that a short distance of sap conveyance is of little account. But the reason in this case is that the side branches bent down with previous loads of fruit have their structure so fractured or the ducts so compressed as to embarrass the movement of the sap.—W. G. Waring, Sr., in New York Tribune.

FRUITS FOR THE ENGLISH MARKET.

HUNDREDS of Canadian fruit growers are only waiting for encouragement to ship freely of their finer fruits to the British market; but until our Steamship Companies will guarantee us safe carriage, at temperatures under 40° Fah., no body will risk to ship such perishable goods.

To-day, Aug. 8th, we have received a call from Mr. Shuttleworth, of the well-known firm of Simons, Shuttleworth & Co., of Liverpool; and we called together several of our growers to meet him. He responded to questions somewhat as follows :—

Will it pay to ship Canadian tomatoes, and in what packages ?—I think it will pay. They are being grown in hot houses, and also being imported quite freely; the English taste is being rapidly educated to demand them, and they pay from three to six cents per pound for them in Convent Garden. Surely that would pay, when you see them in Canada at 25 cents a bushel. They should be wrapped in thin, white or very light colored tissue, showing the red through it.

What about plums ?—I do not think it will pay as a rule to ship plums to our markets; it is like coals to Newcastle, or peaches to Grimsby. It is the house of the plum in England, and yet, there are seasons such as last year when it would pay you very well.

What fruits may we ship to England with a prospect of making money on them ?—Apples, pears and peaches. We already have the English apple market; and if rightly put up we have this apple business largely in our own hands, for Canadian apples are highly appreciated in Great Britain. This year the English crop is about a half average, but Canada has as many if not more than last year, and a trifle better in quality. Last year Canada shipped about $300,000, largely east of Toronto. Nova Scotia shipped only 82,000 bls. last year, but Mr. Charles Nixon who has just returned from a trip through the Annapolis Valley, estimates the crop this year at 200,000 bls. The States report variously; New York will have a good crop, Arkansas 25 per cent of a full crop, California, Oregon and Wincousin full crops.

Would you advise the growers to ship or to sell at home ?—I would never ship an apple when I was offered anything like $2 a bl. at home. On the whole, it is often safer to ship on a poor market report than a good one, because the good report encourages to heavy shipments from all parts.

What apples do you advise us to grow for export in Southern Ontario ?—The Baldwin, Greening, Spy, King, Russet and Snow if clean. The best apple you have is the Spy, and is highly appreciated in the English market. The Ben Davis as grown in the West is a fine apple, but as grown in Canada is not equal to your Baldwin.

Do you advise shipping in boxes or barrels ?—For main crop in barrels, decidedly. Boxes would multiply packages endlessly, and lessen size of individual sales. People would take a box who otherwise would take a barrel. Boxes are all right for early apples, as Duchess, going in cold storage, and, if you get proper storage, should do well for you. In barreling apples, use a screw press, for it keeps a steady pressure and this will cause a bruise that will dry without rotting.

Do you think we can ever succeed in making a market for our grapes in Great Britain ?—It is very doubtful about

your success with Concords, for in the first place the English people don't like their flavor, and, in the second, they do not hold to the stem ; when they arrive, they are all shelled, and they want to be able to lift them by the bunch. Rogers 4 is a better class of grape to ship us. Still, of course, there is a possibility of the middle class taking your grapes. If once you could get them to like them, we could easily dispose of four or five carloads a day in Liverpool. If you want this market, you must capture it very soon, before South Africa comes in. That country will be a great competitor in peaches, grapes and apples.

THE ELBERTA PEACH.

WE have been looking for a good yellow fleshed peach for shipment to the English market, a variety that will carry better than the Crawfords do. Possibly the Elberta is the peach we are looking for, though so far it has been very little grown in Ontario. Mr. Frances W. Glen, of Brooklyn, writes us, Aug. 1st.

"Please permit me to call the attention of your readers to the Elberta peach. As a market peach it ranks first-class. It is large, well shaped, high colored, handsome, and of excellent quality. It reaches this market from Georgia in *prime condition*. Of course it is a yellow fleshed peach of the Early Crawford style. Grown in Ontario it would come into market the latter part of August or early part of September, and at that season would command a good price in our North Atlantic Cities. I never have seen peaches ready for table use in such fine condition in this market since I came here in 1886."

Mr. Glen also encloses the following clipping from the New York Sun :

"The peculiar pointed peach that has been sold so commonly hereabouts the past few weeks is named the Elberta. This peach has been out about eight years, but has never before been seen in such numbers in this market. The smaller and medium-sized fruit is likely to show the end pointed in a marked degree ; the larger and largest Elbertas may practically lack this characteristic of the smaller fruit and be round in form like the ordinary peach.

The peaches with which New York has recently been supplied so abundantly have come mostly from Georgia. The Georgia peach crop this year has been more abundant and more excellent in quality than ever before, and fine, handsome fruit from this State has been sold here this year cheaper than ever ; at about half the prices of last year. The first of the Georgia peaches come about July 1 ; the very plentiful supply ends with the month of July, and the first week in August sees practically the last from Georgia. Though this year's crop of Georgia peaches was the greatest ever known and the prices low, they are said to be still planting peach trees in Georgia.

The first peaches to arrive in this market come from Florida ; the next, from the Eastern coast, come from Georgia. The supply of California peaches in this market this year was much less than usual ; the early peaches commonly sold by dealers and venders were mostly of the abundant crop of Georgia.

Wholesale dealers say that the Maryland, Delaware, and New Jersey peach crop is light this year, and that peaches are not likely to be any cheaper than they have been already.

PROPER DISTRIBUTION OF FERTILIZERS IN THE SOIL.

IT may not be considered an important matter by many who use commercial fertilizers, as to how much opportunity they give them to dissolve and distribute their fertility where all the roots of the crops can get it, but it is a matter that should receive the most careful consideration by all farmers, and be carefully worked out, practically, on every farm where these manures are used.

It is a very common practice, when planting potatoes, corn and other crops that are usually cultivated in hills or close drills, to put all the fertilizer in the hills or rows. When we come to think of the very small space that a fertilizer so placed will occupy even when entirely dissolved, compared with the space the roots occupy, the folly of the plan can easily be seen. If we were to put a handful of almost any commercial fertilizer in a potato or corn hill at planting time, it would need to be dissolved before it could be of any service to the plants when they grow. How much water would be needed to properly dissolve it? Perhaps a thousand times more in measure than the fertilizer. We cannot live upon clear molasses, nor upon oil, nor upon any other equally concentrated food alone. No more can a plant live upon solutions of nitrogen, phosphoric acid and potash, that are more than five hundred times stronger than they should be. The human system would soon have a disease that we call indigestion or dyspepsia. And, why may not plants have indigestion? Indeed these solutions are so strong in some cases that they actually cause the death of the tender plantlets. Even seeds may be killed by the caustic characted of the strong acids and alkalis that come in contact with them.

But while a part of the soil may be overcharged with fertilizing material, by far the larger part of it is needing it, when we think of how far the roots of our crops extend; how they permeate every inch of the soil, in most cases, in their search for moisture, and food, it is very easy to see how needful it is that the food should be there for them to lay hold upon. Not only does the plant need enough to start it in its growth while the roots are yet all in the hill, but it needs it all the way through life.

There need be no fear that the fertility will be lost by being scattered throughout all parts of the soil that will finally be within reach of the roots. They will find all in due time, and it will be much better for the crop in the end, than if it were all put where the roots may reach it in the first few weeks of their growth. The feeding area of the roots is greatly increased as the season advances. I have seen whole surface soils of a corn field so netted with tiny rootlets after cultivation had been stopped that a small knife blade could not be run into theground without cutting some of them, and the same thing is true of most potato fields, if properly conducted.

The fruit grower needs do some thinking on this same line. The roots of his trees and vines go all over the ground, and in many cases the orchard trees and other things are planted so close together that they interlock in their hungry chase for moisture and fertility that they have a noiseless but no less real war underground. It is the survival of the fittest, indeed, and

oftentimes, none of them survive very well,

Not long since when lecturing to farmers' institutes in Western New York, I saw a few of about as foolish attempts at manuring an orchard as one could imagine. There were piles of farmyard manure over two feet high carefully placed close to the trunks of the trees. It reminds me of what my friend Prof. L. H. Bailey once said of the absurdity of this practice, that it is like putting a feed of oats in a sack and tying it to a horses legs instead of putting it in his manger. The manure will in time spread the fertility somewhat, but it can never do the good in such a position that it could if scattered at once where the feeding roots are. The same is true in principle of commercial fertilizers. Scatter them where they will be needed, instead of putting an excess in a few places and none elsewhere. They are easily dissolved, especially nitrogen and and potash, as they are usually found. Failure to get good results are often rightly chargeable to such unwise applications as have just been described, and in some cases, actual damage has occurred. Feed the crops liberally but as wisely, as you would your animals.

H. E. VAN DEMAN.

DWARF PEAR CULTURE.

THE simple fact of an orchard being planted on an elevation sufficient to resist or to escape the blighting effects of an untimely frost, which often occurs at blossoming time, or at the critical period of the early formation of the embryo fruit, sometimes results in rewarding the owner with an abundant and profitable crop. The same elevation may secure the advantage of an exposure affording the proper circulation of air. On the other hand, his neighbor whose orchard is located in such a spot as to feel the full force of the destroying element, meets with disappointment and loss. This is in verification of the truth of the statement recently made by Mr. J. W. Smith, of the Weather Bureau: "Not only does the climate of each State differ from the adjoining one, but each town, and, in fact, each man's farm, has a peculiar climate to itself."

Hence the study of the climate of each farm and its relation to the growth of certain plants, will not always fully apply to the neighboring farm or farms. This forcibly illustrates the importance of locating the pear orchard, if possible, where it will be the least liable to be affected by sudden changes, reaching low temperatures as above alluded to.

The soil considered the most conducive to a healthy and vigorous growth of the pear is one consisting of a gravelly clay loam, with clay sub-soil. A light loam soil should always be avoided, though it seems best suited to the peach. Experience proves it, however, to be decidedly objectionable to the cultivation of the pear. Thorough drainage of the soil, either natural or by artificial means, is another important essential.

After being well pulverized the soil is in condition for planting the pear trees. A distance of twelve feet apart each way was formerly considered the proper distance for dwarf trees.—New York Tribune.

PLANT PROPAGATION FOR PARKS.

By F. Kanst, Chicago, Ill.

THE subject of Plant Propagation for Parks is one which is often brought before park officials for consideration, there being so few parks throughout the country so well supplied with native trees and shrubs that none need be procured.

In the majority of parks, plants are obtained by collection from the surrounding country, or by purchase from nurseries. In larger parks, where thousands of plants are required, it is very essential in order to obtain the best results, as well as from an economical standpoint, that a park nursery be established where such trees as the elm, oak, ash, linden, negundo, birch, maple, etc., may be grown on from various young plants which can be purchased from nurseries very reasonably and kept growing in a healthy condition until such time as they may be needed. Here also shrubs and herbs can be propagated from seeds and cuttings. Such plants when in the park nursery rows can be had at any time, thus saving delay and loss, and valuable time, as the seasons for planting are usually so short. Another great advantage is, that such plants are more easily established.

A park nursery can furnish quickly and in large quantities such varieties of trees, shrubs and plants as will be mostly used in the plantation—such as spiraea, cormis, ligustrum, philadelphus, ribes, symphoricarpus, lonicera, poplar and willow, which with many others may be readily increased from cuttings to be obtained from plants already about the park, or by collecting or purchase. A place for these cuttings should be prepared, preferably in sandy soil, early in winter, then covered to a sufficient depth with spent horse manure, or leaves, to keep the frost out. Cuttings from young, well-ripened wood should be taken in the winter and cut to about ten inches in length, then placed thickly in rows in the prepared ground. The covering can be removed as fast as space is wanted for the cuttings, and after they are in place this covering can be put over them again to prevent hard freezing which would injure the vitality of the cuttings.

The planting of the cuttings into the nursery should begin when the heavy frost is over, or about the 15th of April, when most of the cuttings will have calloused in their winter quarters. A suitable piece of ground for the nursery can usually be found in some uncompleted portion of the park. The ground should be well ploughed and pulverized, and ample provisions made for water. Cuttings should be planted in rows running north and south, so that the sun can penetrate between the rows, as they make better plants and grow straighter than if planted east and west.

For park purposes cuttings may be planted from 12 to 14 inches between rows and from 6 to 8 inches in rows, or about 50,000 to the acre. One man with a good hand cultivator can attend during the summer to 100,000 plants.

At one year old cuttings will have grown into fine plants ready for use in the plantations, and when planted in their permanent place at one year old the cost is very little compared with what it would be if the plants were transplanted and allowed to grow another year or two in the nursery. They are easy to handle and only small holes need be dug to insert the roots. In plantations where the ground is soft

as it should be one man can plant about 500 per day.

The raising of their own plants, as before described, has been practised by the South Park Commissioners for the past years and over 400,000 trees and shrubs, all grown in this way, are now planted in different parts of the park and all in fine condition. There are also 150,000 cuttings, which were made last winter, growing in the nursery at the present time which will be ready for next spring's planting.

A paper read at the recent meeting of the Park and Outdoor Association, at Minneapolis.

PACKING AND SHIPPING FRUIT.

THE business of raising fruit and vegetables for commercial purposes seems to be constantly changing in some particulars, and the field of operations widening. Increased transportation facilities, lower freight rates, and varying competition necessitates adopting the most approved methods in everything pertaining to the business, to secure profitable results. The fittest will survive is the inevitable law, or in other words there is going to be less room for poor and inferior goods, whether fruit or vegetables, and no show at all for those who pack their goods deceitfully, or what is nearly as disastrous, in any but prime condition, proper shape and in good containers. A marked example of successful packing is shown by the Californian fruit growers. They had to excel in every respect, and the goods must be the most attractive offered in order to command a sufficient price to pay them any profit over the high freight rates to eastern markets. When growers and producers of more favored states display the same skill and conscientious pains to excel in their special field, they will secure something like the returns which the business intelligently pursued is capable of yielding. To remain in the business and make it pay, you must follow as closely as possible the example of men who get good prices for their products. If you cannot raise fruit that is so attractive in appearance, you can still exercise the same care in picking, packing and marketing the fruit you have. You can throw out for consumption nearer home every specimen that is faulty and inferior, especially when this poor stuff injures the sale and reduces the price of the best. You can at least use the neatest and most presentable packages.

Mark your packages fully. Probably no one thing works so much difficulty in the handling of goods on commission as the failure on the part of the shipper to have all his packages fully marked. It is scarcely more important to mark each case or barrel with the name of the firm to whom shipped than to mark from whom. Don't be afraid to mark your own name and address on your goods, and above all don't leave the consignee in any uncertainty because you know he may be large enough to have a shipment in the same line from another grower the same day. Many commission merchants are willing and anxious to furnish shippers with serviceable stencils, giving the commission merchant's name and address plainly, and providing simply a number immediately under their name which indicates to them that the goods are from you, each tag thus sent out being recorded with the shipper's respective names and addresses. Notify the firm to whom

you ship at once of your shipment, and be sure you give them the important particulars. If you were pleased with their previous sale, give your agent a word of encouragement occasionally. A rubber stamp and pad is a very serviceable thing and can be had for five cents and this form of printing press can be operated by anybody, and all your empty packages plainly marked with your name and address before the rush hour of shipment.—Market Gardener.

FRUIT PACKAGES.

WE are constantly seeking after improvements in our fruit packages; for although the 6 quart and the 12 quart baskets are excellent, and just the thing for near markets, they are not so well adapted for long distance shipments. For peaches and choice grapes too, smaller baskets of three and five pounds are wanted by the buyers, in which they can carry home enough for the dessert table. We have a very nice case made for our English shipments 2 ft. long, 1 foot wide and 5 inches deep, in which 4 veneer baskets fit, side by side, a very good package. Since getting that package we have noticed the following in the R. N. Y. which is at least suggestive, and if we could find the address of the maker we would be glad to secure a sample.

In Figs. 1419 and 1420 are shown types of very neat, handy and serviceable crates that are used for shipping fruits and vegetables from the South. Fig. 1419 contains eight three-pound baskets, and Fig. 1420, eight five-pound baskets. There are many vari-

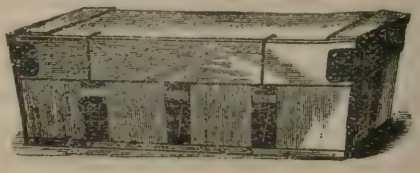

FIG. 1419.—

ations in the style and size of these packages, but all are made on the same general plan. They are light and convenient to handle, give good ventilation,

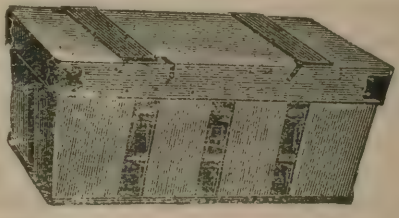

FIG. 1420.—

protect the contents, and are much liked by retailers, as the small baskets are just of a size for retailers convenience.

THE BARTLETT PEAR, the great favorite among cultivators and consumers the world over, is known in England as Williams, and in France as Poire Guillaume. Already (Aug. 13), this excellent pear is beginning to arrive in the English markets, both from France and from California. We are very anxious to have our Canadian Bartletts placed on the English markets and we hope that this season's experimental shipments will prove the superiority of the Canadian product.

CO-OPERATIVE MARKETING OF PEACHES.

TO know when and how to pick, pack and market requires watchful care and good judgment. The grower must have all things ready, the wagons in order, the packages on hand, the labor employed, the packing house ready and market provided. It is better to have too much help than to permit fruit to get too ripe for want of labor to care for it at the proper time. Where the grower is obliged to call to his aid that necessary evil, the commission man, it is well to have him ready also. Select one firm in the town where you expect to market your fruit, of known good reputation. Ship to one firm only. If you use the commission man right, and do your part of the work as it should be done, you will not often have cause to complain.

In my locality the growers have organized shipping associations at several stations from which fruit is shipped, each with a manager whose sole business is to look after the grading, packing and marketing. The members simply gather the fruit and take it to the packing house at the station. Here it is graded, and each grower given credit for the number of bushels of each grade he has brought. The individual is known no further. The fruit goes to the company's stock and is sold by the grade. At the end of each week, an average is made of the prices obtained during the week for each grade, and each grower is given credit for his share in the proceeds. This method of marketing has proved very satisfactory to the members of these associations. It gives them time to devote all their energies to the proper management of their orchards and careful handling of the fruit. One member complains that the individuality of the grower is lost. That he can acquire no reputation for himself nor for his own fruit. But this is an age when combines and corporations swallow up the individual, and the fruit-grower must take his chances with the rest.

PRUNING PEACH TREES.

PEACH growers are gradually learning that the peach tree will not only stand very severe pruning, but that it does best under such treatment. Where this is not practiced, long, slender branches form, and these produce fruit mainly at their outer extremities. This overloads the branches and causes them to break down even when the tree is producing no more fruit than it could easily carry if properly distributed. If the branches were cut back to within two feet of the trunk they would throw out numerous fruit spurs and produce fruit close to the trunk and main branches where it could easily be supported. Trees handled in this way will also produce more perfect fruit. Such severe cutting back may be done without any injury whatever if performed while the tree is dormant. Although peaches are reckoned an uncertain crop, it is still one of the most profitable fruits that can be grown in localities adapted to it. Select the finest varieties and give high culture and it will require but little fruit to give you a good money return.—American Farm News.

THE FERTILIZATION OF GARDEN CROPS.

GARDEN crops have a short period of growth, hence they need a soil rich in available plant food. Too large a pile of half decayed vegetable matter, as stable manure or compost should not be used because of insect and fungous pests. A liberal use of fertilizers and manures for vegetables and fruits enables the gardener to directly meet the special wants of any soil for crops raised in succession during the same season on the same lands. Too much soluble salines should be avoided for some vegetables, such as lettuce. Change the location of crops from season to season that different crops may secure any surplus of plant food. There are no unfailing recipes for a general fertilizer mixture best adapted to all kinds of soil, but for vegetables a mixture containing double the quantity of potash that there is of nitrogen or phosphoric acid deserves a careful trial. Crops will sometimes be benefited by the extra use of nitrate of soda during the growing season, especially to such crops as cabbage, turnips, cucumbers, onions, lettuce, asparagus, strawberries, grapes and fruit trees. Peas, beans and all leguminous crops need no such addition, as they draw nitrogen from the air. A moderate use of manure or compost periodically will be beneficial. New lands being used for vegetables and orchards will be benefited by deep plowing and enriching the lower layers with a liberal supply of phosphates, as S. C. Fla or odorless phosphates, a treatment that may be repeated from time to time whenever practicable. The occasional use of burnt lime will help garden crops, especially when there is much humus in the soil, 1000 to 1500 lbs. p a. being enough. Calcium carbonate will assist to liberate plant food from the soil and compost material and favors beneficial bacterial life.—Dr. C. A. Goessmann, Hatch Exp. Sta., Mass.

THE ANJOU PEAR.

It was many years after I fruited the Anjou before I ate a good one, but it was no fault of the tree or fruit. This pear should be picked and kept in a cool, dry, even temperature, say between 35 degrees and 45 degrees, and it will be in eating condition in not less than four months. Reasonable people who believe that pears are fit to eat will always regard the Anjou as a first-class fruit in every respect, it being hardy, a profuse bearer in proper soils, and of flavor that to a normal palate will give satisfaction.

By why is nothing said about the Sheldon? It is first-class. With me the Urbaniste is a very good pear and a good bearer, but forty years' experience leads me to believe that the following six are best for me, and my preference is in the order named: Belle Lucrative, Sheldon, Bartlett, Beurre d'Anjou, Bosc and Seckel.

Pears, to be at their best, need attention, a thing that probably they oftentimes do not get, hence the diverse judgment on their quality. Pears should be thinned on the tree when about one inch in diameter, and at least one-half the fruit removed, except in rare cases. You will get larger and finer fruit and the quality will be improved.—Exchange.

FRUITS IN THE KITCHEN.

PRESERVING PLUMS.

Spiced Plums.—To every pound of plums take 1 lb. sugar, 1 teaspoonful cloves, one teaspoonful cinnamon, ½ teaspoonful nutmeg and ½ cupful cider vinegar. Prick the skins of the plums with a fork so they will not burst. Tie the spices in a thin muslin bag. Heat the sugar and vinegar, skim, put in the spices and plums; cook until tender, but do not allow them to break. Seal air-tight while hot.

Plum Apple Jelly.—Wash the plums, put into a porcelain kettle with water just to cover them and boil until tender. Pour into a jelly bag and let drain. Wash the apples, put into a porcelain kettle and boil until thoroughly tender, then put it into a jelly bag and let drain. Do not squeeze them. To 1 pint of the plum juice and 1 pint of the apple juice add 2 pints of sugar. Boil the juice 10 minutes, then add the sugar, which should have been heated in the oven, and boil 10 minutes longer. This can be tested by dropping in a saucer and placing in a cool place; if it does not spread but remains rounded it is cooked enough. Roll the glasses in hot water and fill them with the jelly while hot. Sprinkle powdered sugar upon the jelly and cover the glasses with thick writing paper, brushed over on the inside with the white of an egg and turned down on the outside of glass. This work should be done while the jelly is quite hot and it will not mold.

Plum Butter.—Take the plums and the apples that are left from the jelly and press through a sieve. Take a pint of each and boil slowly for half an hour and then add 1 pint of sugar and boil ten minutes longer. Seal air tight. If preferred, pint for pint of sugar and pulp may be used; when this amount of sugar is used it is not necessary to seal the butter air tight.

Spiced Plum Butter.—Prepare the pulps of plums and apples as in the foregoing recipes. Take 7 pints of plums, 7 pints of apples, 8 pints of sugar, 1 pint of cider vinegar, 2 ounces of allspice, 2 ounces of ground cinnamon and 1 ounce of ground cloves; boil altogether 40 minutes. Spiced plum butter is very nice with roast meats.

Scalded Plums.—Wash the plums and put in a stone jar; cover with boiling water. Place a cloth and weight on top. They will keep well. Do not be alarmed at the heavy scum that rises on top Just lay it back and take out your plums, being sure to replace it. This is a simple way to keep plums for winter use.—American Agriculturist.

THE MODEL PEACH ORCHARD.

In my mind's eye the model peach orchard would be that in which the trees were twelve feet apart each way, and the trees never allowed to reach more than eight feet in height and seven feet in greatest diameter of top, with heads branching out within six to twelve inches of the ground; and then every inch of them should be clothed with foliage and fruit to their summits. They should be cultivated, fertilized (if they need it), thinned and pruned on the most radical, intensive system. But a peach or any other fruit tree cannot grow good fruit for any length of time, if fruit and foliage are crowded together at the extreme end of a branch without any foliage for the six or nine feet; nor can the little bunch of crowded foliage on the end of such branches supply the necessary strength of branch, stem and root sufficient to keep up strength and vigor.

Flower Garden and Lawn.

COREOPSIS.

THE coreopsis of our gardens embraces several species and varieties of hardy native annual plants, being found in immense quantities in various sections of Texas, Nebraska and Oregon. In their native homes the flowers bear but little resemblance in size and form to those in cultivation at the present day. The plants grow from one to three feet in height, and although they are of somewhat slender habit yet the growth is vigorous and compact. The flowers, which are of the size and shape of our common field daisy, embrace every shade of yellow, orange and rich reddish brown, varying to red or crimson, some varieties being nicely marked. The flowers, which are produced in the greatest abundance, are borne on slender foot stalks, and are very desirable for cut-flower purposes during the summer, as they remain a long time in perfection after being cut. The calliopsis forms a very attractive object when grown in groups in the mixed border. The period of bloom depends entirely on the season and manner in which the plants are grown.

As the coreopsis is so hardy it is an easy plant to grow, and often little or no care is bestowed upon it, and the result is that the flowers are small and quite inferior in size and color. Now this should not be the case. Give the plants an opportunity to properly develop themselves, and see how well they will repay all the care and attention bestowed upon them. The coreopsis does best when grown in a sunny situation and in a deep, moderately enriched soil. The plants should not be crowded together, but be given ample space.

As the coreopsis proves to be so hardy, in most places surviving the winter with slight protection, I consider it desirable, when an early bloom is desired, to sow seeds early in September on a nicely prepared border, in a sheltered situation; sow thinly, cover slightly, and as soon as the plants are well up, thin out, so that they stand four or five inches apart, and as soon as the ground becomes frozen, cover slightly with straw or evergreen branches.

As soon as the weather becomes settled in the spring the covering should be removed and the plants transferred to the place where they are to bloom. Thus treated they will bloom very early in the season, and where a succession of the finest flowers are desired an additional spring sowing will be absolutely necessary. For this purpose the seed should be sown in a cold frame early in April, or on a nicely prepared border early in May, and the plants afterwards

FIG. 1421.—COREOPSIS.

transplanted as they are large enough to handle. Be very careful to give the plants while small an abundance of space in which to properly develop themselves, as this is a most essential point. Or, the seed can be sown early in May where the plants are to bloom, and the seedlings thinned out as soon as they can be handled. This mode of culture will produce the finest flowers, but the plants will be rather late in coming into bloom.

Of the many varieties the following are the most desirable and distinct:

C. coronata. This species is a native of Texas, and in cultivation grows about two feet in height. The flowers are of a large size, of a rich yellow color, with a circle of rich crimson spots near the the disc.

C. Drummondii is a native of Texas, and in cultivation grows about two feet in height. Plant very bushy and compact in habit. Flowers about two inches across, of a rich golden yellow color, with a small dark centre.

C. tinctoria grows about two and a half feet in height. Flowers are of a rich brown, margined with golden yellow. Several varieties of this species are usually found in seed catalogues.

C. tinctoria fl. pl. This grows about two feet in height. The flowers are double, of a rich golden yellow, with wine maroon spots. A very desirable variety of recent introduction.—Vick's Magazine.

PYRETHRUMS.

PYRETHRUMS have been so greatly improved, both in the quality and color of their flowers, during the past few years, that they now constitute one of the most desirable groups of hardy plants the cultivator has at his command. Vigorous in growth and free in blooming, they afford a wide range of color, and are alike valuable for contributing to the attractions of the flower garden and supplying flowers for indoor decorations. While unsurpassed by any hardy plants of their season in the rich effect they produce in the garden, they are especially useful to cut from. The flowers are practically free from the objectionable odor characteristic of many of the composites, and can be readily arranged, either alone or in conjunction with other subjects, to present the most attractive appearance, and they retain their freshness for a considerable period. Not the least important of their many good qualities is the facility with which they can be grown, for it is not necessary to do much beyond planting them in well prepared soil in a suitable position to ensure a plentiful production of flowers for several years.

In engaging in the cultivation of either single or double pyrethrums it will in the first instance be necessary to determine whether they are required simply for the embellishment of the flower garden or are wanted for the supply of cut blooms for exhibition or the decoration of indoor apartments. If intended for flower-garden decoration all that will be necessary will be to select suitable positions in the mixed border, and properly prepare the station by enriching and breaking up the soil. But when required for furnishing exhibition blooms, they should be planted in a bed in the kitchen garden or reserve ground, as they can then have any attention that may be required without interfering with other subjects. It is an advantage to plant those also that are to be cut from for house decoration in a bed or border elsewhere than in the flower garden, as when large quantities of flowers are cut the general effect is necessarily more or less impaired. In whatever position they are to be grown the soil should be liberally enriched with partly decayed manure from the stable or farmyard, and be then broken up to a depth ranging from one to two feet with spade or fork. In the preparation of stations in the mixed border two large shovelfuls of manure should be dug in at each. The beds, on the other hand, should have sufficient manure spread over the surface to form a layer about four inches in thickness,

and be then dug over or trenched. When the manuring and digging are done immediately before planting, twelve inches will be a sufficient depth to which to stir the soil, but when the work has attention in the autumn or early in the winter the ground may be traversed to a depth not exceeding two feet. In all cases the soil should be well broken up and the manure thoroughly mixed with it.

When prepared in pots pyrethrums may be planted with the full assurance of the most successful results at any time from early in spring until the autumn, but the months most favorable are March and August. Examples in the open ground can be the most safely lifted, divided and re-planted in the month first mentioned, and in the early part of September. On very heavy soils spring planting is preferable, and in all cases the plants put out at the end of the summer or the beginning of the autumn should be strong, otherwise, it would be advisable to winter them in a cold frame and plant early in the spring. The second row is the most suitable position for them in the mixed border, and to avoid conspicuous blanks when they are not in bloom they should be at least four feet apart. If the plants are comparatively small and an immediate effect is required, they may be arranged in twos or threes, but generally speaking, putting them out singly is decidedly the best. Those from which exhibition blooms are to be cut should be eighteen inches apart each way, and those intended for the production of flowers for indoor decorations should be planted twelve inches apart in rows, with eighteen inch spaces between them. It is important to avoid deep planting, more particularly on heavy soils, and as far as possible the base of the plant should be on a level with the surface.

To support the flowers of the tall growing double varieties, and all of dwarf growth will not require supports.

It is necessary to keep a sharp lookout for slugs early in the season, as they are very partial to the young growth, and will do an immense amount of mischief if not held in check. The flower-heads should be cut off as soon as they have lost their freshness and beauty; but the flower stems ought not to be cut down to within a few inches of the base, as is so frequently done. The stems are furnished throughout the greater part of their length with leaves, and there can be no doubt that the removal of so great a portion of their foliage as is done when the flower-stems are cut done is decidedly injurious. Immediately the flowering season is over the soil should be pricked up with a frock to a depth of two or three inches, and a layer of manure be spread over the surface. If the weather is dry at the time, give the plants a thorough soaking of water previous to the application of the manure. With this assistance they will soon commence to make new growth, and produce a second crop of flowers, which, if not equal to those produced early in the season, will present an attractive appearance and be useful for cutting. Propagation may be effected by division or from seed, but unless the raising of seedlings is carried out in a systematic manner, it will be better to depend wholly upon dividing the plants for the increase of stock, because of the large proportion of the seedlings that will be practically worthless. The plants may be divided early in the spring or at the end of the summer.

The following varieties comprise the best of the large number now in cultivation:

Double.—Amphitrite rose, carmine;

Anemoniflorum sangnineum, carmine rose, light centre; Captain Nare's purple crimson; Chamois, carmine shaded, chamois yellow; Cleopatra, white, with yellow centre; Cornte de Montbron, rose pink, tipped white; Delicatissimum, rose lilac, shaded orange in the centre; Emile Lemoine purple crimson, tipped yellow, and shaded yellow in the centre; Fulgens plenissimum, pale carmine, shading to white; Haage et Schmidt, crimson, pale rose in the centre; Hermann Stenger, rose lilac; J. N. Tweedy, rich carmine red; Le Dante, bright rose, shaded orange in the centre; Madame Jules Aldebert, pale pink with light centre; Marquis of Bute, deep rose pink; Melton, bright magenta crimson; Niveum plenum, pure white; Paul Journu, bright rose, centre creamy white suffused rose; Prince of Wales, purple crimson, with orange colored centre; Prince of Teck, bright crimson; Rev. J. Dix, rose carmine; Rose Perfection, rosy red pale rose centre; Rubrum plenum, rose lilac; Rosy Morn, blush white; Sulphureum plenum, blush white, with pale yellow centre; Sylphide, pure white; Voie Lactée, white tinted pink; Wilhelm Kramper, deep rose, tipped white.

Single.—Albatross, rich pink; Adrastes, rose purple; Chromis, crimson purple; Darwin, light red; Hamlet, deep pink; Isis, purple crimson; Lotus, pure white; Mrs. Bateman Brown, carmine crimson; Weston, bright pink; Roseum, pale pink; Ruby, rose purple; Sherlock, rich crimson; Tasso, bright crimson.—Frank Brunton, Boston.

THE JAPAN IRIS.

MY experience has shown that the Kæmpferi iris requires an abundance of water during the growing season. My first attempt at the cultivation of this plant was with a collection of upwards of two dozen fine varieties; the plants when received from the nursery were strong clumps, and where set out early in the spring and given the same care I gave the German iris. They grew finely and produced some magnificent blooms in June. The latter part of the season was extremely dry, but I supposed that the plants were all right, as drouths never seemed to injure the common sorts. But the next spring, when they started to grow, it was noticed that the foliage of nearly all of them was of a sickly yellow color and the growth very weak, a large portion of them dying in a few weeks, and those that survived made a very poor growth and produced only a few inferior flowers. I at once concluded that what the irises needed was water and plenty of it, so I removed them to a swampy piece of land which could be flooded. The results were surprising; the foliage soon assumed a dark green color and began to grow vigorously, and by frost many of the leaves were upwards of four feet long,—and such flowers as they produced the following June! Orchids could not surpass them.—*Vicks Magazine.*

PENTSTEMON BARBATUS.

FIG. 1422.—PENTSTEMON.

HAVING this hardy perennial in bloom at "Maplehurst" all through the month of July, we have photographed a spray to give our readers an idea of its flowering habit. By itself it is hardly showy enough at a distance, it needs to have other more showy kinds with it, such as for example, Coreopsis lanceolata, which blooms about the same time. The name is from pente five, and stemon a stamen, but the fifth though present and conspicuous, is sterile. The common name is Beard Tongue, because the lower lip of the corolla is more of less bearded at the throat. There are about sixty varieties, mostly natives of North America. There is a great variety of colors and many of them are especially desirable for the herbaceous border. The species above referred to, sometimes called Chelone barbata, has flowers varying from light red to carmine, and grows to about three feet in height.

GROWING AMARYLLIS.—Place about one inch of small pebbles or charcoal in the bottom of a six or eight-inch crock. For soil use sand, muck and rich loam. If the loam is not rich add some fertilizer. Plant bulb with about one-third above soil, so water will not get in the neck of the bulb. Plunge in the earth in summer, in good light, but not in the sun. In fall ripen foliage, and set in a moderately cool place. When you wish them to bloom bring them to a warm window, and when leaves begin to form water gradually. I have had good success with this treatment. Some varieties are easier grown than others.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

Notes and Comments.

WHITESMITH GOOSEBERRIES came to hand from Mr. Thos. Beall, Lindsay, July 26th. They were exceedingly fine, the largest we have seen. Mr. Beall writes, "These three dozen weigh 17.62 ounces avoirdupois, averaging almost half an ounce each (0 49 oz.) A few of them we weigh considerably more than half an ounce each.

PRUNING RASPBERRIES is usually delayed until leisure time in winter or spring; but if time permits, we would advice cutting out the old wood soon after fruiting season, in order to give the young shoots the better chance of development. We do not any longer shorten back the young canes in their growing season, because that tends to cause them to waste their strength, growing laterals instead of fruit buds. It is time enough to shorten back in the spring, cutting off simply the weak tops, and leaving just as many good plump fruit buds as the cane seems strong enough to bear. This advice applies, of course, only to red raspberries. The black cap varieties should be summer pruned to encourage laterals at an early age.

Columbia and Shaffer raspberries seem very similar, with some advantage in favor of the former.

The Loudon promises to be one of the best of the newer red raspberries, both in vigor, hardiness, and size of fruit.

INTERESTING PLANTS AT RENNIE'S.—A few hours were profitably spent at Mr. Rennie's trial grounds, at Swansea, Toronto, recently. The situation is delightful, and the grounds kept in good trim by Mr. McLay, the gardener, who

took pleasure in showing us his many varieties of phlox, asters, dahlias, cannas, etc. The Ice King primrose was pointed out as a fine variety for cemetery planting, the bloom being pure white, and the plant close in habit; Achillea, the Pearl, a pure white flowering variety of the common Achillea millefolia, was also noted as well adapted for the same use. Delphinium formosum is a beautiful larkspur, one of the newer varieties, which far surpass the old ones of our grandmother's gardens. Helianthus multiflorus is a very satisfactory hardy perennial; so free in bloom, and adapted to almost any soil and location. Of the Salvias we noted Holt's Mammoth as one of the best for the kitchen garden, and Salvia patens as an excellent bloomer for the flower border. Gaillardia grandiflora and Coreopsis lanceolata are two hardy perennials that should be in every garden, for they succeed admirably everywhere. A double flowering Convolvulus, Calystegia pubescens, seemed to be desirable for ornament, if only it is free from the faults of its near relative the common bindweed.

ONTARIO FRUIT IN WINNIPEG.—We do not know who are the guilty persons, who have been shipping badly packed fruit to Winnipeg, and bringing down upon the whole of Ontario the abuse of the Winnipeg press. Certainly we have in Ontario plenty of good packers, who can put up their fruit equal to Californian packers or any other packers. The article referred to is from the Winnipeg Commercial, and reads as follows:—

"Ontario shippers of fruit will have to improve their methods vastly if they hope to be able to do anything in this market. Ontario shippers have never yet been able to lay down soft fruits in Winnipeg fit for consumption. Ontario apples are all right, and in the fall of the year we also receive large quantities of Ontario grapes, but most other varieties of Ontario fruits invariably arrive here in a condition unfit for consumption. This is, no doubt, mainly due to the careless and slovenly way in which Ontario shippers handle the fruit. The fruit is evidently often too ripe when packed, and there appears to be an utter absence of care in handling. No attempt appears to be made to properly assort and pack the fruit. Peaches, plums, etc., are dumped promiscuously into baskets, and they arrive here in a mushy condition, with the juices streaming from the baskets. The distance from the point of production is not the trouble, as California fruits are arriving here constantly in car lots in perfectly sound condition. Skill and care in handling is applied to the California fruit, while in the other case there is lack of knowledge and carelessness. This accounts for the difference, and is, no doubt, the reason why Manitoba gets her fruit from California.

British Columbia growers have made a few shipments to the Winnipeg market, with a result not unlike that of Ontario shipments. This year we learn that British Columbia growers are endeavoring to learn and practise California methods in handling fruits, and if they follow up this policy they will, no doubt, in time learn the secrets of shipping fruit to distant markets in a condition fit for consumption"

In explanation we may say that the Commission men who are doing the shipping of fruit at the present time, are the persons responsible for such failures; for they buy up basket goods indiscriminately at the wharf or the auction market—goods that were never packed for long distance shipment, and load up cars with them for distant markets. When once our growers undertake putting up their finest varieties for Winnipeg, or any other distant market, they will make a different showing. They will use small crates, not baskets, and they will wrap each specimen, and pack tightly, so that they will open out in prime condition.

We believe there is room in our best fruit centres for a special business, viz:—that of fruit packing. A firm who would make this a specialty, providing the boxes, and wrapping material, grading the fruit and sizing it, for so much a case; and perhaps even doing a shipping business as well would surely make a great success of it.

THE FRUIT CROP.—Worse and Worse are the words that describe the fruit crop this season. The drouth has been so long and so intense that nearly every kind is undersize while the same cause has made plums and peaches to drop badly.

The Bureau of Agriculture reports about 6,000,000 bearing apple trees in the Province, and the yield in 1896 was about 56,000,000 bushels.

The apple crop this year will fall much below the average and winter varieties will be particularly scarce. A correspondent of the Sun says:

"There are not, he says, enough really good apples in Ontario to-day for the home market alone. Prince Edward County has about half a crop of unsalable fruit, and buyers from that section are endeavoring to contract for supplies in Grey and Simcoe. Buyers from Michigan have also been in the same counties endeavoring to contract for supplies. They had previously been through Kent and Essex, where they were evidently unable to secure what they wanted. Grey and Simcoe have about half a crop of Rhode Island Greenings and about an eighth of a crop of Spys. "On 120 full-grown trees, which should average four barrels to a tree, I will not have ten barrels, all told," says the correspondent, "and I have only heard of one lot better than mine. Of Ben Davis," he goes on, "there is a fair crop and there will be a good crop of King Tompkins." Another point made by our correspondent is the fact that Germany is inquiring for evaporated fruit, which indicates that supplies are low in that country, too. In the Northern States there is also said to be a poor crop of winter fruit. On the whole our correspondent believes that winter apples will bring a higher price this season than they have done in many years.

Peaches are turning out to be a poor crop, while pears are a pretty good crop. On the whole the outlook is not discouraging because prices are looking up once more, and profits will be more satisfactory than with a too abundant crop.

FRUIT FOR OMAHA.—Prof. Saunders of the Dominion Experimental Farm is forwarding each week a collection of Canadian fruit to the Omaha exhibition.

A good show of Canadian peaches and plums will also be made, which ought to open the eyes of some of our American cousins to the possibilities of fruit growing in Canada.

NEW FRUITS COMMITTEE—At the last meeting of the Association the following gentlemen were appointed a committee on new fruits, who will report at the next meeting in St. Catharines, viz.: Prof. H. L. Hutt, O. A. C., Guelph; W. E. Wellington, Toronto; and L. Woolverton, Grimsby. Persons having new seedling fruits of value, are requested to mail one or two samples to each of these gentlemen, and if thought worthy by them, they will receive due notice.

FRUIT IN MANITOBA.—We have just received a letter from Mr. John Parkinson, Portage la Prairie, calling attention to the capabilities of his section for growing certain varieties of fruit. He has tried Duchess, Wealthy, and about twenty seedlings; all are doing well at four and five years of age, have never lost one inch with frost, and why should they not bear fruit?

THE APPLE PROSPECTS have materially changed since our earlier reports, and statements made earlier in the season now need many qualifications. The Fruit Trade Journal of New York has recently quoted remaks made by the writer early in the season, which are not now applicable.

Not only in Canada, but everywhere the apple crop seems to be short, and the prices promise high.

According to the latest diagram sent out by Messrs. Woodall & Co., of Liverpool, the highest price Canadian Baldwins brought in 1896 was 14/6, but

for the most price it was about 10/. In 1897 the highest was 25/ and the lowest 12/6. If these latter prices prevail, fruit growers will have to cease growling about the disappointments of the fruit growers.

A GOOD HINT.—A good many of our societies hesitate about making a flower show, thinking it a vast undertaking. We have found it the simplest thing in the world, and about the most enjoyable. Let the show be only one day and evening, and if in a small place, in the evening only; let an orchestra be secured for the evening, and have a promenade concert to view the flowers. Let these be well distributed through the hall, so as to be of easy access, and the popularity of the affair will be surprising. The members contributing to the floral show, may have free tickets of admission, and all others should pay; and the proceeds will pay expenses.

One very important consideration is the engaging of a man who knows how to move flowers to take charge of the collecting of the plants and their return to their owners. This is essential to to the success of the show. A committee should go in advance and secure a list of exhibits to be collected. The Kincardine Society arranged to hold a show of this kind on Aug. 25th, and early in August sent out the following circular.

August 4th, 1898.—The Kincardine Horticultural Society has decided to hold its second Annual Exhibition in the Town Hall, Kincardine, during the day and evening of Friday, August 26th. To ensure success it is very necessary that you as a member should do your part towards the exhibition by a liberal display of flowers, foliage and flowering plants. You will please note that any healthy plant will be gladly accepted for exhibition. There must be a large display. A collector will call upon you on Thursday, 25th August, so please have your exhibits in readiness for him. The greatest care will be taken of everything.

Mark all your pots for identification.

On Friday evening a promenade Band Concert will be given in connection with the exhibition.

All members contributing plants or flowers are entitled to two tickets of admission to the hall. General admission, 10 cents. The directors have decided that between the hour of four and five o'clock in the afternoon the school children will be admitted free.

A. C. WASHBURN, President. JOS. BARKER, Secretary.

FRUIT GRADER.—An excellent invention has been completed by E. H. Wartman, Kingston, Ontario. It is a fruit grader, consisting of a sorting table and fruit sizer, so arranged that fruit of various sizes can be separated easily for separate packing. We are trying it for Bartlett pears for the English market, and we intend using it later on for apples.

For the best success in marketing our fruit we must grade, both in size and quality.

SMITH'S SEEDLING PEACH.—A sample of this Seedling was shown us on the 25th August, at a season when good peaches are very scarce. Hales Early was just over and Honest John not yet ready. The peach was grown from seed at Hamilton, by R. T. Smith, who believes he has a prize worth looking after. It is large in size, with beautiful bright, red cheek. It has a distinct suture, a deep cavity, and quite a depressed apex. The skin is easily removed without a knife. The flesh is white, very tender, sweet, rich and very juicy. A freestone—a capital dessert peach.

Question Drawer.

A New Raspberry.

1023. SIR,—I have among my seedling raspberries a black raspberry or Black Cap, that is the largest I ever saw — fully one-third larger than Gregg. It fruits freely from the new wood and is very late, the first fruit on the new wood just ripening, and red and green berries yet to ripen. If it proves as good as I think it is, I ought to make something out of it. Can you advise me as to the best way to proceed?

L. FAIRBANKS, *Whitby, Ont.*

We would advise our correspondent to send samples to the New Fruits Committee; and also to all nurserymen. Possibly some one will buy the right of propagation, if it has real value.

Handling Potatoes.

1024. SIR,—When is the proper time to store potatoes? I have an early kind about ripe. Should they be put in cellar now, or left in the ground, and if so, how long?

A. B. C., *Iroquois.*

Potatoes should be dug when fully matured, which helps prevent the development of the rot (blight), and kept at a temperature not to exceed 50 degrees. The ideal way of keeping potatoes is in cool dry pits—where they retain their best qualities.

Few cellars are suitable for keeping potatoes. Heat shrivels the tubers and forces growth. Light makes the skin and flesh green, and unfit for food.

ALF. BROWN, *Iroquois.*

The Luna Moth.

1025. SIR, — I managed to capture a pair of worms on a hickory tree, and I cannot find them in my insect books.

They are green, with yellow specks in the same places as the prickles on the Cecropia. They are very much like the Polyphemus only they have no specks on the back of the head.

Their cocoons are about an inch long and half an inch both wide and high, and are perfectly white.

GEORGE B. PATTISON, *Grimsby.*

The insect referred to in the above letter, as far as I can judge from the brief description of the worms and cocoon, is probably the Luna Emperor Moth *(Actias luna)*, the most lovely insect that we have in this country, with its pale green wings drawn out into long crescent-shaped tails, and pure white body. Its caterpillars feed upon hickory, butternut, walnut and beech trees.

C. J. S. BETHUNE, *Port Hope.*

Sunflower Seed for Poultry.

1026. SIR,—Please give directions for curing sunflower seed for poultry.

A SUBSCRIBER, *Iroquois.*

Sunflowers, for the seeds, should be allowed to dry thoroughly on the plants, if possible, and this will be quite possible if the weather remains as dry as we have had it in this section of Ontario for the past six weeks.

Then the heads or flowers should be cut off, leaving about 3 inches of the stem on the heads, and then placed heads upwards on a floor, always selecting a dry place (because sunflowers readily gather moisture). When perfectly dry, the flowers should have the seeds rubbed out of them by hand, which will be done very quickly as soon as the flowers are perfectly dry.

I emphasize the fact of having the flowers perfectly dry, because the sunflower seed is very difficult to dry if it has gathered any moisture.

Now, if the season should turn wet towards the ripening-time of the flowers, we recommend cutting them ahead, and

drying them indoors, which will be the safest way, and avoid any possibility of mildewing of the seeds, which is important to avoid for all purposes.

In this way, I have saved any quantity of sunflower seeds and had some excellent poultry food.

ANTON SIMMERS, *Toronto.*

Pear Crack.

1027. SIR,—I have a Flemish Beauty pear tree which for the last two years has borne little else than pears cracked almost to the centre. What is the remedy. I saw an account of introducing fluid of sulphur, by boring a hole and inserting the sulphur and plugging over Would this benefit my tree ?

J. W. S. CHATHAM.

It is strange how much more ready people are to follow out quack nostrums, than to follow out the advice of the scientist. Sulphur could not be taken up into the tree through on augur hole. The cause of the cracks in the pears is no doubt the well-known apple scab, to which the Flemish Beauty is especially liable. It is a fungus which lives through the winter on fallen twigs, leaves, and younger twigs. It attacks the young fruit and causes it to drop, or if the attack is on the fruit when grown larger, it often causes it to crack open, exposing it to the attacks of other fungi. The best remedy is frequent spraying with Bordeaux mixture, as directed by this Journal at the proper season.

Ginseng.

1028. SIR,—In the last HORTICULTURIST I saw an article on Ginseng. It strikes me I have just the place to grow it, viz., a hardwood grove (Maple sugar bush), nicely underbrushed. There are no stones and soil is quite good and deep. If you have any opinions to offer me upon the subject, where I can get the seeds, will the plant thrive where I propose, and any other practical information you may be able to supply, I shall be greatly obliged.

G. H. FAWELL.

Canadians had better buy seed instead of plants. It will be cheaper and less risky. It is possible that both plants and seed can be bought of Mr. George Stanton, Summit Station, Onondago County, New York. If he cannot meet the wishes of intending buyers, he may know who can.

D. W. BEADLE, *Toronto.*

FIRE FANGING OF MANURE is destructive, and although a well-known occurrence in manure heaps, some farmers do not try to prevent or suppress it. Fire fang is overheating of the manure, due to rapid decomposition, a large proportion of the ammonia being liberated and lost. When fire fanging occurs, drive a crowbar into the heap in several places and pour in cold water. A better plan, some think, is to wet the manure and turn the heap over, adding dry earth and plaster, placing the coarse portions of the stable manure in the center. Cold water absorbs ammonia and prevents its escape, and unless it is used much of the volatile ammonia will escape while the manure is being handled. The heap should not be kept wet, but slightly damp, which will promote decomposition; but overheating may always be controlled by cold water. Farm and Home.

Open Letters.

Brown Rot.

SIR,—I am sorry to find that the "rot" (brown rot we call it) is making serious inroads in the vineyards here. So far the vines of black loam overlying sand are most seriously affected, but I notice a little of it on our best situations. A few days more will determine what course the disease will take.

A. M. NEILL, *Windsor.*

Black Currants.

SIR,—I noticed in the HORTICULTURIST for last July a short article on "Black Currants," with a cut of some very fine ones, although I doubt very much if they are any better than a Saunder's seedling sent out by you two or three years ago. The bush is still rather small, but I picked three pints of large fruit last month. It was the first to ripen, fruit all ripe together, no second picking, and the bunches long and full of fruit. The seedling sent out the year before, although it had a fair amount of fruit, it was all scattered, and had to be gathered one at a time. Last year, although I had taken good care of the bushes, I had little fruit, when all around me they were bearing fairly well, and I wrote to you about them, and you kindly gave me some hints. This year I had a large crop, some bushes going over two qts. a piece, and my neighbors had next to none, and bought from me. I am coming more and more to the conclusion that in this north country that the late frosts do the trouble. I send you these particulars, as I thought you might be interested in them. I had 100 qts., which sold readily at 12½c. per qt., against imported fruit.

A. J. COLLINS, *Listowel.*

Reports Should be Reliable.

SIR,—Allow me to offer a suggestion as an admirer of your valuable publication.

It is desirable that you should have competent correspondents to report to you on the various topics throughout the Province so that reports can be relied upon as substantially correct. I notice in your issue for July a report from Ottawa.

I presume your correspondent gauges his opinion by the crop in his sheltered cottage garden in the city, but it is quite incorrect as regards the general crop of plums in the Ottawa Valley, they are generally a failure from blight. About strawberries, he says, the weather was cold after blooming time and the crop was poor. He must have Klondyke on the brain, there was no cold weather in the Ottawa Valley in June.

This is not the first erroneous statement I have noticed from the correspondent and in a journal like the HORTICULTURIST it is misleading.

J. HENDERSON,
Stittsville.

THE APPLE CROP.

The following information regarding the apple crop in England is given us by Messrs. Woodall & Co., of Liverpool, a firm of good standing in Great Britain. The figures represent the number of reports received, and the comparison for the past three years is as follows:

This year	42	over av.,	150	av.,	139	under av.
Last year	10	"	"	74	"	230	"	"
1896	75	"	"	152	"	165	"	"

You will notice above figures indicate a larger crop than last year, but smaller than two years ago.

NEW ENGLAND STATES.—Of these New Hampshire and Massachusetts have the best crops, generally estimated at ⅓ to ½ of 1896. Maine is light for an apple year, probably not over 25 % of two years ago.

NEW YORK STATE.—Taken as a whole, the Hudson River and Western N. Y. are reported light and scattering, and a very light crop for that State, perhaps a little in advance of last year; and after supplying its own demand with a surplus for Western trade, it looks as though there would not be a great quantity for export.

WESTERN AND SOUTHERN STATES.—Missouri, Illinois, Kansas, Arkansas, and Virginia, which were heavy last year, are reported to have no show for a crop, and generally may be called a failure. Michigan, however, has quite a crop in some sections, but in others quite a failure.

NOVA SCOTIA was reported to have a good crop, but latest reports are conflicting.

ONTARIO.—East of Toronto winter fruit is generally scarce and scattering, and inclined to be spotted. North and West there is a better showing, and in some sections plenty of fruit; however clean stock is by no means too plentiful.

FROLIC OF THE FRUITS.

SAID the lemon to the squeezer,
"Did you know 'twas Christmas time?
When I hob-nob with the cherry and the pineapple and lime:"

But the grapes here interrupted, tumbling down in a bunch,
Crying, "All of us in bottles makes the best part of the punch;"
But the cocanuts up-bristled—neither eyes nor hair they lacked—
Yelling, "Milk beats all the punches, do you think our heads are cracked?"
The bananas pointed fingers full of scorn at all they saw:
"We're the flour of Brazil, though we're better when we're raw."
The bumptious apples chimed in with a peeling laugh and said:
"Not a fruit can beat us painting any town and orchard red."
The pomegranate objected, and a voice with mellow reach
Sang, "Look upon this cheek and say, now a'int I just a peech?"
Pecans began to rattle, and walnuts made a whirr
To drown some northern voices: "You're a chestnut with a bur-r-r."
The chestnut snapped their shells; "You've been roasted, too," they said;
And the peanuts sneered—"Oh, we're the only nuts who have a head."
The oranges and grape-fruit came slowly rolling in
Singing, "See the best of Christmas—we've a Klondike in our skin."
The quince and the citron grumbled over family jars gone by,
When their brethren from a stew fell to fingering in pie.
The melon rolled with laughter as she bumped upon the stairs:
"Preserved and pickled Christmas! watch the dinner come in pears!"
The prunes began to simper as they clambered off their plates:
"These fruits have got no memory, watch them take along dry dates."
The procession fell in line, and the berries said 'twas plum,
But they didn't care a fig, and the currant jokes were "bum."
They all took up a quickstep, and with many bounds and bobs
They tropped into the sanctum—"Merry Christmas, Mr. Hobbs!"
The gooseberry turned green, as she courtesied with a duck;
"Here's your health in cherry-bounce; Happy New Year, Mr. Tuck!"

A CHESTNUT BURR.

Our Book Table.

THE WESTERN HORTICULTURAL SOCIETY. The first published report of this young Society has come to hand from the president, the Rev. Prof. Baird, of Winnipeg. It is a tidy pamphlet of 120 pages, and contains interesting and valuable papers on such topics as House plants, Practical Tree planting, Small Fruits for Manitoba, Doubtful fruits, Trees for Windbreaks and Winter Protection, etc., etc. We wish every success to our Sister Society.

CATALOGUE of Champion Fruit Evaporator, a Dryer, G. H. Grimm, Mfg. Co., Montreal.

REPORT OF THE CHEMIST, (Prof. T. T. Shutt,) of Central Experimental Farm, Ottawa, 1897.

REPORT OF THE ENTOMOLOGIST AND BOTANIST (Dr. Fletcher,) and of the FOREMAN OF FORESTRY, (W. T. Macoun,) of the Central Experimental Farm, Ottawa.

SALYCILIC ACID IN FOOD.

IT is well-known to-day that salicylic acid is a powerful antiseptic. As such it retards the action of organized ferments like the yeast plant and putrefactive bacteria. It hinders and prevents fermentation, the souring of milk, and the putrefaction of milk. Its action upon unorganized ferments is even more powerful. It completely arrests the conversion of starch into grape sugar by disease and pancreatic extracts. This action is directly opposed to the process of digestion, and, were there no other reason, the use of salicilic acid should be universally condemned. These facts in connection with salicylic acid have been recognized very thoroughly in legislation. The use of the acid has been condemned by most of the European countries having pure food laws. In France it is forbidden by law. In Austria, Italy and Spain it cannot be used without the danger of incurring a heavy penalty, and all South American States having pure food laws have absolutely forbidden its sale. The laws of many of the States forbid its use. By a decision of Mr. Wells, the dairy and food commissioner, the use of salicylic acid in food is prohibited in Pennsylvania.

I wish to call attention here to another fact in connection with the use of salicylic acid which is of extreme importance, viz, the sale of preservalines, preservatives, etc., under various high-sounding names, intended for use in private families. A number of these, claimed to be perfectly harmless, are on the market, but actually contain salicylic acid as the main ingredient. The conscientious and careful housekeeper should put an absolute veto upon the the use of any such compound.—The Sanitarian.

TRANSPLANTING FERNS.—The best time to transplant wild ferns is in the spring, when they first start a new growth, though with care they may be transplanted any time during the spring and summer months. The soil used should be light and porous. Pure woods earth mixed with leaf-mould is a good composition. It is a good idea when posible to secure the soil where the Ferns grow wild. If planted in a bed it should have a shaded situation free from the direct rays of the sun. After removing the dirt from the bed for about two feet fill in with some coarse gravel and a layer of dried grass, then fill in with the prepared dirt. Ferns like a moist, but not a soggy soil. If you have a good situation with neither too much sun, nor too much shade, try a bed of wild Ferns bordered with Pansies, and you will have a "thing of beauty and joy forever," or at least while the summer lasts.

$500 for Suburban Houses. — The editors of *The Ladies' Home Journal* offer five hundred dollars in prizes for photographs of the prettiest suburban houses. In this way the *Journal* will secure pictures of the most attractive summer homes in this country, and from these a selection will be made for publication. The great interest in the American home — inside and outside — is shown in this offer of big prizes.

A FINE BLACK WALNUT TREE. *(From a photograph)*

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THE WALNUT TREE.

"On barren scalps she makes fresh honors grow.
Her timber is for various uses good;
The carver she supplies with useful wood;
She makes the painters fading colors last.
A table she affords us, and repast,
E'en while we feast, her oil our lamp supplies,
The rankest poison by her virtues dies."
—COWLEY.

WHEN black currants hang ripe on the bushes of an English market garden of which we have read, the berry-laden branches are cut off and carried away to be stripped of their fruit in the cool shade. A comfortable way on a hot day, and a beneficial operation for the bushes too, which thus severely pruned give a plentiful crop next season. This may serve to illustrate the rationale of the old English fashion of knocking the walnuts from the trees by beating with long poles the ends of the branches (on which alone the fruit is produced) and breaking many of them off. The broken ends would then be stripped of their nuts and the boughs thus "shortened in" throw out more bearing spurs, increasing the tree's future fruitfulness. So it was "Merrie England" that gave rise to the not very chivalrous couplet :—

"A woman, a spaniel, and a walnut tree,
The more you beat them the better they be."

Walnut-beating, however, is nowadays as much in disrepute as wife-beating, the former practice though right in theory being too rough and violent in execution. The walnut figures again in English Folklore in the riddle :—

"As high as a wall,
As bitter as gall,
And yet it is man's meat."

Man's meat! or as an old writer more quaintly puts it "A most pleasant and delicate meat, comforting to the stomach and expelling poison." At Glastonbury, in the churchyard of St. Joseph's Chapel (Joseph of Aramathea, who tradition says landed here, over-awing the hostile natives by causing his staff to blossom forth as a thorne tree.) there used to stand a walnut tree regarded with awe and reverence by the people, as possessing the weird and mystic power of deferring the putting forth of its buds till after the festival

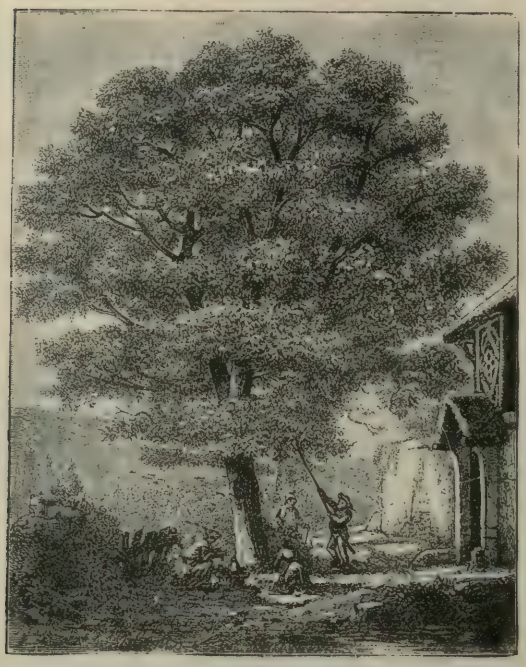

FIG. 1423.—PERSIAN OR ENGLISH WALNUT TREE (J. REGIA).

of St. Barnabas (11th of June) had been observed. At Welwyn in Herefordshire a walnut tree once stood whose branches covered an area of 2,000 square yards (more than 2-5 of an acre). Though thus appearing in English Folklore and flourishing on English soil, the term Welsh nut or foreign nut (A. S. Wealch; foreign) corrupted into the form of the word walnut, clearly shows that this tree is not a native of England. It is mentioned by 16th century writers, however, and was probably introduced at a much earlier date by the Romans. £600 (nearly $3,000) was the price for which a walnut tree was once sold to be used for gunstocks, at the time of the war with Napoleon. A single plank of walnut wood was large enough to serve as a table for a banquet given by the Emperor Frederick III. Now, however, it is cultivated solely for its nuts in Europe. Spain and the South of France boast walnut trees said to be over 300 years old which bear from 15 to 18 bushels of nuts each, and in the Crimea there is a tree held to be more than 1,000 years old, which yields on the average 80,000 nuts a year, and has even produced 100,000 nuts in one season. Walnut trees line the roads in Germany and Northern Italy sheltering the wayfarer and gratifying his eye and palate. Near Frankfort in the former country, in days gone by, no young farmer was allowed to marry till he had shown his desire to promote the general welfare by planting some of these trees. The old Romans whose rural tastes restored what their armies destroyed, were the distributors of the walnuts through Europe. Highly did they prize the walnut's wood and the nuts they imagined would cure hydrophobia. At marriage feasts the bridegroom, to show he had done with boyish sports, would scatter walnuts among the children. To this refer the lines:

"Now bar the door the bridegroom sets
The eager boys, to gather nuts."

In Roman times walnut trees grew in

FIG. 1424.—FRUITING BRANCH OF PERSIAN OR ENGLISH WALNUT, *from Fuller's Nut Culturist.*

great numbers round the Lake of Gennesaret according to Josephus.

The Romans procured this tree from the Greeks, who in turn received it from the Persians, perhaps as a gift from some Persian Monarch.

In Old Persia, in the Province of Ghilan, by the Caspian Wave, the walnut, the peach and the apricot, a philanthropic brotherhood, originated.

So much for the history of the most important (from a pomological standpoint) species of the walnut *Juglans regia*, the Old World Walnut, now extensively cultivated on this continent also. In Southern California one firm alone has more than a square mile of walnut orchards, and another grower despatched at one shipment in 1890, some $110,000 worth of these nuts. In Ontario it is commonly known as the English Walnut, though it has been variously termed Royal Walnut, Madeira Nut, French, Chile, or Persian Walnut. Commercial orchards of *J. regia* are profitable in California and in a wide belt of country between the Atlantic and the Mississippi, from Southern New York to Georgia. In Southern California they give returns of from $200 to $1000 an acre. It is not hardy in Northern New York but at Rochester there are some fine old trees. On our side of the border in the Niagara Peninsula it is very tender, and at Windsor it is reported as being usually winter-killed. Among the many varieties of *J. regia* with their different characteristics it is, however, possible some variety could be found that would be of some use in this climate. In sheltered positions at Grimsby two or three trees have borne a fair quantity of nuts, and it has also been fruited in the Township of Louth. At Saratof on the Volga in Russia which has a winter temperature only one degree milder than that of our own Quebec, there were in 1883 two large bearing trees of *J. regia*, and how much colder is the winter at Quebec than in the Niagara Peninsula or Essex County? At present its planting cannot be recommended, except for the trial of some such hardy variety by our experimental stations or where a sheltered place can be found as an interesting

NOVELTY FOR THE HOME GROUNDS,

which may possibly bear a few nuts for family use. Nor would we put it in a conspicuous place as some of the branches will probably be killed and render it somewhat unsightly.

THE BLACK WALNUT *(J. Nigra)*

one of our most valuable timber trees is hardy throughout Ontario, though "indigenous only to a small area, extending from a point near Port Franks on Lake Huron, running north of London nearly in a line with the Grand Trunk Railway to Toronto, and extending along the lake shore as far east as Cobourg." The Indians have made use of its nuts for hundreds of years, and according to early records, sometimes consumed incredible quantities at one meal, such as would be dangerous for a civilized person to indulge in. The Black Walnut has a strong, greasy flavor, and "is among nuts what bacon is among meats. It has quite recently been found that its rank flavor can be moderated sufficiently by the action of heat to allow the nuts to be used for confectionery purposes. A report on Nut Culture in the United States, issued by the U. S. Department of Agriculture in 1896, says, "Concerning the

POSSIBILITY OF REAPING PROFITS

from Black Walnut plantations much has been written and predicted, but very little has been actually proven except that, for the nuts alone such plantings have not been profitable." It then quotes one opinion against and another for the Black Walnut as a commercial fruit-tree. We would suggest pickling the green walnuts as a mode of disposing of them to better advantage. With respect to its merits as a tree to be planted for its timber, we must remember that while the Black Walnut grows more rapidly indeed than the pine or white spruce, yet even at the age of fifty, when under favorable circumstances, it will have a diameter of about 24 inches, its timber is only salable for the plainest work, such as legs of chairs or tables, and it is not until the tree attains the age of 75 or 100 years, that it can be employed for fine cabinet work. Few people care to look so far in the future for returns from an investment; but we would suggest that a Walnut plantation would be a good

ENDOWMENT FOR SOME INSTITUTIONS

having grounds of ample extent. Charitable institutions, universities, asylums have often a considerable quantity of land surrounding them, in which Walnut trees planted either in lines or groves would form a pleasing embellishment to the landscape while growing, and some day would give rich returns from the proceeds of the lumber. Whilst they should be given plenty of room when planted for ornamental or pomological purposes, they should when set out solely for the production of timber be planted pretty thickly to encourage an upright growth. We are indebted to Mr. Southworth, the Clerk of the Forestry for Ontario, for the suggestion that where the soil is not too dry, in which case it is not very good for the Black Walnut

WHITE ASH WHICH GROWS RAPIDLY

and is valuable when small, should be planted with the Walnut. White Ash is used in Canada for the handles of implements, in carriage making, and for hoops and staves, and if sufficient quantities could be forwarded, would find a market in Great Britain. The Walnuts should be planted as soon as they are ripe at a depth of from 2 to 4 inches at regular distances, say 5 or 6

feet apart, and the Ash seeds in between. Walnuts make a much better growth if planted where they are to remain. An alluvial or a deep rich loamy clay soil suits the Black Walnut best. Little pruning will be required, but the land should be cultivated for 8 or 10 years. A good deal of judgment will be required in thinning the grove, as only a very small percentage of the trees will be allowed to occupy the land at the end of forty or fifty years.

Passing on to consider its

VALUE AS AN "ORNAMENTAL"

we would discourage as far as possible its use in private gardens, except those of an extent rare in this country, as it will get to be too large and will take up too much room. It has also a tendency (either from the bitter principle in its leaves souring the ground or because it is a great feeder) to impair the vigor of surrounding vegetation, a consideration that must never be forgotten wherever we plant this tree or for whatever purpose. To this the poet refers in the lines:

"The walnut—whose malignant touch impairs
All generous fruit—".

On the other hand in parks standing alone in a wide open space, we can imagine few embellishments

OF GREATER ULTIMATE EFFECT,

graceful and elegant in its youth, noble and majestic in its age.

Very closely resembling the Black Walnut in appearance is

THE BUTTERNUT OR WHITE WALNUT
(*J. cinerea*).

The foliage of the butternut is, however, in early summer a lighter green and towards autumn it wears a more faded aspect than that of the Black Walnut. The leaves of the butternut when passed through the hand give off no odor

FIG. 1425.—JUGLANS CINEREA—BUTTERNUT.

whilst those of the Black Walnut have a strong scent. The nuts of the former are more conical and are of a better flavor than the latter

——"the dark fruit
That falls from the grey butternut's long boughs."

The butternut should bear some fruit within 10 years from planting and mature individual trees will yield sometimes 15 or 20 bushels. It has some possibilities as a commercial nut, if marketed in larger quantities, or if some easy way of preparing its meats were found. As the nuts vary a good deal in size and cracking qualities, an improved variety might be found if it were experimented with Its chief value, however, is as a timber tree, but it must be crowded to secure a straight upright growth. Its rather

FIG. 1426.—BUTTERNUT.

sprawling habit, when in an isolated position renders it much inferior to the Black Walnut as an ornamental tree. Though if all trees were as beautiful as

FIG. 1427.—FLOWERING BRANCH OF HYBRID WALNUT.
(Leaves from two feet to a yard in length—Bright green, fragrant.) *Cut from Fuller's Nut Culturist.*

that shown as an illustration (Fig. 1434) to Mr. Cameron's article in this number, it would be most desirable for parks and extensive grounds.

THE SUBJECT OF HYBRID WALNUTS

is a fascinating one. Dr. Beadle in the June number of this magazine tells how Mr. Burbank, by crossing the Black Walnut with the walnut of California, has obtained a walnut of larger size, better flavor, and parting more readily from its shell than either of its parents.

Another remarkable hybrid was obtained by crossing the English Walnut with the California species, the resulting tree being of greater beauty than either of its parents and only surpassed by the Eucalyptus among Californian trees, in the rapidity of its growth. The Vilmorin, originating near Paris, in France, is, however, a less successful hybrid. Whilst superior to one of its parents the Black Walnut, it is inferior to its other parent the English or Persian Walnut.

We come next to the recently introduced

WALNUTS FROM JAPAN AND EASTERN ASIA.

J. seboldiana and *J. cordiformis* the two principal forms obtained from Japan, and *J. mandshurica* from eastern continental Asia, are almost the same in wood, foliage and habits of growth, and to quote again the U. S. bulletin of 1896 on "Nut Culture." "They are very closely allied botanically and no distinct characters seems to have been noted except in regard to the form, size, and smoothness of the nuts, the varying thickness of the shell and the quantity and quality of the meat. Of the three, the nut of *J. mandshurica* bears a close resemblance to our butternut, while that of *J. seboldiana* more resembles an elongated form of Persian walnut, and *J. cordiformis* a small thin-shelled, heart-shaped form of the same species." The first trees of *J. seboldiana* were introduced into California about 1860, and of late years it has become quite widely distributed in the United States. It has been found perfectly hardy at the Experimental Farm at Ottawa, where it has been fruiting for the past two years. The nut obtained from this

FIG. 1428.—A CLUSTER OF NUTS.

tree there is described as smaller than that of the black walnut, but of better quality, with a flavor very much resembling the butternut. As the trees there are still young there is no data yet to be had for a comparison as regards productiveness between them and other walnuts that will grow in this province. The authorities at the farm have had little experience with *J. cordiformis* as it was only planted there last year. As it is a native of the most northern portion of the Japanese Empire, it would very probably succeed in Ontario. It is said to be of less vigorous habit than *J. seboldiana*. *J. mandshurica* is the least valuable of the three forms, having a very rough thick shell.

Prof. H. E. Van Deman who is probably as well posted on the subject as any one in the United States, in a recent reply

FIG. 1429.—J. SIEBOLDIANA.

FIG. 1430.—J. CORDIFORMIS.

through the Rural New Yorker to an enquiry by the writer says: — There is no doubt of the productiveness of the Japan walnuts in America, as they are fruiting from New England to the Gulf of Mexico. They are all hardy except in the most trying climate of the Far North, and fully as much so as our native walnuts. As to their profitableness, there is doubt. The species *Juglans seboldiana*, bears a rather small nut with a very thick shell, and one from which the kernel is extracted with difficulty. It is of little value except as a novelty, and as a shade or ornamental tree. *J. cordiformis* is smaller in nut, but the smooth shell is not very thick; the kernel is almost round like that of a hazelnut, and comes out very easily.

FIG. 1431.—J. MANDSHURICA.

Both are of good quality. It might pay to grow the latter for its nuts. I think these trees would pay to grow for their timber, as they are of rapid and stately growth. They make fine trees for the park or anywhere about the house or farm where they can have plenty of room.

Possibly some hybrid of value may be found by crossing this Japan walnut with our native or the European species.

A. E. MICKLE,

Maplehurst, Grimsby.

SOME FINE PARK TREES.

FIG 1432.—MAGNOLIA UMBERELLA.

MR. RODERICK CAMERON, Supt. of Niagara Falls' Park, sends a photograph of five different trees growing in Victoria Park, and since we are treating of the Walnut it will be in keeping to have these represented in this number. Mr. Cameron sends the following notes :—

Fig. 1432 represents a very fine specimen of *Magnolia umberella* growing in the Q. V. Niagara Falls' Park. This specimen is, I think, the only one in Canada, it makes a beautiful tree and seems to be quite at home here. It gets no protection, and it is about 25 feet in height and has about 12 feet spread of branches. The leaves are smooth and green on both sides, obovate and lanceolate, and a strong perfume ; the ovate oblong cone of fruit showy in autumn, rose red about five inches long.

Fig. 1433 represents Catalpa speciosa, or Indian Bean, beginning to be widely planted as an ornamental tree and as a shade tree for the streets. It has large open panicles of sweet scented white flowers spotted inside with yellow and purple leaves, large heart shaped.

Fig. 1434 represents Juglans cinerea Butter Nut, or White Walnut, a beautiful specimen of a medium-sized growing tree, fruit oblong ; nut with rugged ridges ; this tree makes a clean and pretty lawn tree.

Fig. 1435 represents the king of all trees for beauty and gracefulness either as a specimen lawn tree or for a street tree. The name is Ulmus Americana or American White Elm. It is large spreading, and has drooping branches, with leaves four inches long.

Fig. 1436 represents Carya amara, Bitter Hickory nut, thin shelled and bitter to eat. The tree makes a beautiful specimen on a large lawn. The wood is famous for its toughness and for fire wood.

DOUBLE DAISY.—The double daisy is a wonderfully winning little pot plant. It is always in bloom. A plant of the pink variety, Longfellow, in a three-inch pot, has at present twenty large, handsome blossoms, and has been in bloom for weeks. I sometimes think that these modest, unobtrusive plants, which we call "so common," give the most satisfaction after all. If aphis attacks the Double Daisy spray with tobacco tea.

Fig. 1433.—Catalpa speciosa, or Indian Bean.

Fig. 1435.—Ulmus Americana, or American White Elm.

Fig. 1434.—Juglans cinerea, Butter Nut, or White Walnut.

Fig 1436.—Carya amara, Bitter Hickory Nut.

FRUIT GROWING IN ALGOMA.

Continued from September No.

IN the interior of the St. Joseph's Island we found a good many small orchards, of fifty trees or so each, which had been planted in response to the persistency of some tree agent, whose pioneer work in many cases cannot be too highly valued, because he has thereby succeeded in introducing fruit-growing into many parts where otherwise, to this very day, it would be thought a foolish undertaking.

FIG. 1437.—SAULT STE MARIE.

On the farm of Mr. A. Clifford, on the A line, about 4½ miles south of Richard's Landing, we found a tree of Shipper's Pride plum four or five years planted, which had borne heavily one season; a Lombard, two years planted showing a little fruit; an Abundance which had passed one winter in safety; a Weaver in bearing; a Moore's Arctic plum bearing abundantly, and a Montreal Peach apple well loaded; also Whitney and Transcendant Crabs. The former does well, but of late the latter has ceased to bear because of the apple scale which is very severe on both fruit and foliage.

The great drawback to the fruit interests of the island, is the ignorance concerning suitable varieties. Already thousands of dollars have been wasted on Baldwins, Greenings, Kings, and other tender varieties, which only lived a year or two, and then succumbed to the winter's cold, that often dips to 40° below zero, or more. Large numbers of *Deacon Jones apple trees* have been sold during the past season at 75 cents each, being recommended as *the great apple for the North!* Many were the inquiries concerning this wonderful variety, and all seemed much surprised to hear that we had never even heard of it.

Another apple just now being advertised here is the *Arctic*, which is being introduced by a Massachusetts firm as an iron clad variety. We do not know anything about this either, unless it is some old variety under a new name.

FIG. 1438.—TREE OF LONGFIELD APPLES AND MR. MCMILLAN.

The most common forest tree on the island is the Poplar, especially where there is a second growth, but the Basswood, Maple, and even the Oak and the Beech are found, though this appears to be the Northern limit of this last. There is also the Larch, the Birch, the Hazel, the High Bush Cranberry, the Juneberry, the Red Berried Elder; and of evergreens abundance of White Spruce, Larch, Pine, Balsam Fir, Hemlock, Spruce, etc. Limestone abounds and the soil which varies from clay to light sand, seems well adapted to fruit, unless it be some of the latter which is too light and too easily affected by drouth.

The thermometer often drops to 40° below zero, but the ground is seldom frozen to any extent, owing to the heavy snowfalls.

The people are prosperous, and very desirous to have the fruits tested to see what kinds are best adapted to their soil and climate.

On the North shore of Lake Huron we traversed a large area between the Sault and Iron Bridge, wheeling a great part of the way. Here and there we found small young orchards of from 25 to 50 trees, mostly Transparent, Duchess and Wealthy. At Sowerby we found two fine young orchards of about two hundred trees each, one owned by Mr. Hagerman, a storekeeper, and the other by Mr. McMillan.

Here in addition to the varieties above mentioned, we found *Gideon* succeeding splendidly, the trees quite loaded down with fruit; Scott's Winter, which was easily distinguished by its peculiarly vigorous young growth, and its large sized foliage; and *Longfield*, six years planted, which was so heavily laden that it was breaking down with its load of fruit, and had to be propped up on every side. The accompanying illustration is from a photograph of this tree, with the proud owner of the orchard standing by its side. In Mr. Hagerman's

FIG. 1439.—MACKINAC WHARF.

orchard we were surprised to find two trees of Abundance plums which had come through the winter uninjured; also some Lombards quite heavily loaded with fruit.

At Iron Bridge we found D. Tait growing quite a nursery of young apple, plum and pear trees, all looking thrifty, and quite in demand among the farmers in the locality.

On the whole, soil and climate considered, we consider St. Joseph's Island the best fruit section in Algoma, unless possibly we except some portions of the Manitoulin Island, as for example, the vicinity of Gore Bay. On the mainland there are many places where hardy apples, plums and cherries may be grown with some success, but the soil is heavy clay and difficult of tillage, which is so important a factor in fruit growing.

Even in the vicinity of Sault Ste Marie certain varieties of apples can be grown, and possibly still farther north; and it has been suggested that it would be wise to have some varieties tested in Waubigoon on the Government's "Pioneer Farm."

The return journey from the Sault, gave us an opportunity of enjoying much beautiful scenery, going down the West Coast of St. Joseph Island, past the farms of Raines and Dunn, and on to Mackinac with its holiday tourists and interesting scenery.

Surely more and more will our beautiful north country, with its magnificent possibilities for the farmer, become the resort of the tourist and the highway of an extended commerce.

FIG. 1440.—MR. THOS. CORDUKE'S GARDEN, SOWERBY, ALGOMA.

FRUIT AT THE INDUSTRIAL.

THE growth of our work is well shown by our exhibit at the Industrial. In glass we showed nearly 200 bottles of early tender fruit put up in preservatives, and of fresh fruit about 1000 plates, Mr W. H. Dempsey alone showing over 100 varieties of apples, and Mr. M. Pettit about 130 varieties of grapes.

This is but a beginning, for when all the varieties under test at our stations come into bearing, the importance of the exhibit can scarcely be estimated.

Therefore, by the year 1910, we might easily exhibit thousands of varieties of fruits, many of them of very special interest.

Mr. W. W. Hilborn, of Leamington, of our south-western station, showed a fine pyramid of the Fitzgerald peach, which, in his opinion, is a desirable variety for a near market. Though a little more tender in flesh than the Early Crawford, it is a trifle later in season, more productive because hardier in fruit bud, and finer in flavor.

The Brigdon was also in Mr. Hilborn's collection; a peach of the same season as the Early Crawford, but a better shipping variety, being firmer in flesh. He has 100 trees of this variety in their first year of bearing, and he estimates his crop at four baskets to a tree.

We asked him his opinion of the Elberta peach, and he replied that he was afraid the wood is a little tender, and that it is too badly subject to the leaf curl to become a leading peach in Ontario.

Mr. Hillborn has 150 varieties of peaches in his orchard, and when these all bear fruit, we should know which varieties to recommend.

Mr. J. Mitchell of Clarksburg, brought his first exhibit, and in it we noticed a good sample of the Wickson, quite firm, September 8. His Clairgeau, Flemish Beauty and Goodale pears cannot be excelled, nor his Duchess and Alexander apples.

Mr. H. Jones, our experimenter near the St. Lawrence river, made an exhibit of fine fruit, among which we noticed especially fine Crimson Pippins and Red Bietigheimers.

Mr. W. H. Dempsey, of Prince Edward Co., said that his apple crop is so poor he hesitated to send in a collection, but, notwithstanding this, he showed about 100 varieties which were an interesting study to the student of pomology.

His crop of the Ontario apple is abundant, and almost perfect, a great point in its favor as one of the best commercial apples for export, for this season most varieties are imperfect in form and more or less blemished.

His Lady apples are a great favorite with the children, but their small size makes the variety unprofitable for market purposes, although in time past special markets have been known for this apple where it brought high prices. The same is true of the Seckel pear which once brought as much as $20 per barrel in New York and Philadelphia, but is now thought too small to grow in the commercial orchard, notwithstanding its high quality.

Mr. M. Pettit had about 130 plates of grapes grown on his experimental farm at Winona. His immense Niagaras attracted much attention. The Moyer grape is a fine sample this year, but not

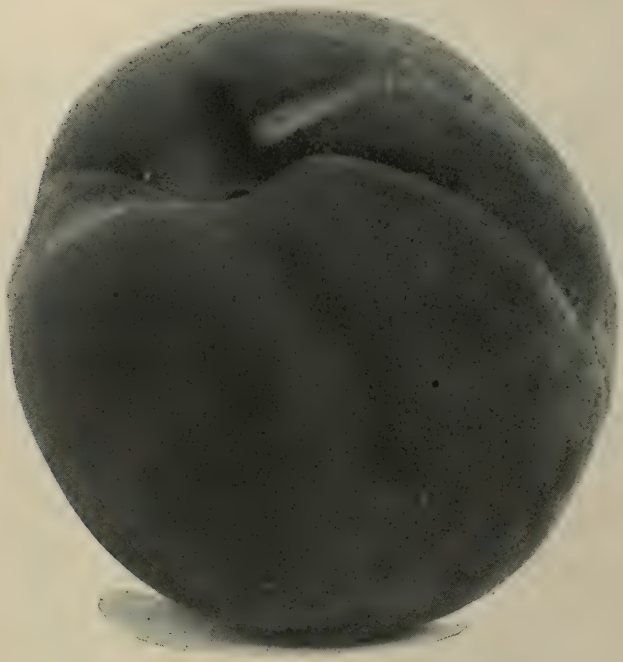

FIG. 1441.—DR. STEWART'S SEEDLING PEACH.

productive enough to plant, unless for the home garden. Its sweet agreeable flavor makes it fine for dessert purposes.

Mr. G. C. Caston well represented the fruit of North Simcoe with apples and bottled small fruits. He showed some immense specimens of Alexander apples, a variety which no doubt can be profitably exported to England in cold storage. He also showed samples of an immense Russian apple, the Hare Pipka, which might also be desirable for the same purpose.

Mr. A. W. Peart represented the Burlington district with a variety collection, which included nuts, grapes, pears and apples. In his opinion nuts ought to be tried at all the stations, for he believes that some varieties would pay well as a market crop.

Mr. Huggard of Whitby showed a good collection. His Clairgeau pears were especially beautiful. This variety is a fine export pear and takes on a wonderfully fine colored cheek which makes it very attractive.

Mr. Burrell of the Niagara station had a full table of many kinds of fruit, showing well the capabilities of his section. His station is new and he had little to show as yet of varieties furnished him by the Board of Control. He has been sent a collection of Japan chestnuts, but he finds it difficult to transplant and very few have survived.

The PEAR EXHIBIT at the Industrial

FIG. 1442.—SECTION OF SEEDLING PEACH.

was very fine. The first prize collection of twenty varieties went to a Hamilton man who showed the following varieties: Seckel, Lawrence, Louise, Goodale, Anjou, Diel, Flemish Beauty, Howell, Bartlett, Souvenir, Beurre Superfin, Winter Nelis, Josephine de Malines, Doyenne du Comice, Easter Beurre, Beurre Hardy, Duchess and Clapp's Favorite.

MR. ORR'S EXHIBIT of sprayed and unsprayed fruit was a constant eye opener to the faithless. It taught by an object lesson most convincing that spraying pays—indeed, that no fruit grower can afford to neglect it. From about thirty different parts of the province he had sets of sprayed and unsprayed samples of the same variety *e. g.* Snows, Fall Pippins, Spys, Greenings, Flemish Beauty pears, etc.; the untreated were utterly worthless, while those treated were large, clean and salable. A Nova Scotian passing through asked if these were the kind of fruit we grow, for, if so, Ontario was not "in it" with his province, but when his attention was drawn to the clean and unclean fruit as an object lesson in spraying, he confessed that Nova Scotia was not "in it" with Ontario

A FINE SEEDLING PEACH was shown the fruit committee on the 9th of September, by Dr. Stewart, of Toronto, which is worthy of trial, judging by the sample, which we have photographed. It is round, quite large, measuring about 2½ inches in diameter, light yellow in color; flesh yellow, of flavor somewhat similar to early Crawford, but firmer in texture, and much later in season.

Originating in Toronto it may be that the tree will be hardier than Early Crawford, which would be an important characteristic.

ALGOMA FRUIT.—Quite a fine collection of apples grown on St. Joseph's island were sent down and exhibited at the Industrial from Mr. Chas. Young, of Richards Landing. The Duchess, Arabka, and Alexander were of good size and color.

PRUNING THE PEACH TREE.

THE popular notion in reference to pruning peach trees is to cut off or shorten the last season's growth each year; practically this plan requires great labor without securing the best results. Peach trees that have been planted three or four years, and have made a fair growth, have a few leading branches more vigorous than the smaller ones, and extending furthest from the trunk. These leading branches should be cut back enough to include those of an inch, more or less in diameter, and as these branches have received a stronger flow of sap, the smaller ones are comparatively weak; but this manner of pruning will check the flow of sap to the main branches, now shortened in, and give increased vigor and strength to the smaller ones, and at the same time serve to give a better and more uniform shape to the top.

This sort of pruning will not be required annually, but its benefits will be greatest if done at once after the trees have borne a crop of fruit, as it tends greatly to restore the vigor of the trees which have become somewhat exhausted by the crop. This pruning is best done early in autumn or in spring before growth begins.

Peach trees should be liberally fertilized, and probably nothing can be used for this purpose better than ground bones and potash, about equal quantity of each, the latter most conveniently in the form of muriate of potash.—Country Gentleman.

SEEDLING FRUITS.

FIG. 1443.—MR. WALKER'S SEEDLING PLUM.

IN advance of the Report of the Committee on New Fruits, we here note a few seedlings which have seemed worthy of notice during September, 1898.

While we desire to avoid advertising novelties, we aim to bring into notice any new fruits or seedlings which we think worthy of further testing, and on the other hand to condemn any which are inferior to established varieties. The following are a few of the new fruits which have come under our notice :—

SEEDLING PLUM, from A. W. Walker, Clarksburg, a rather pretty dark moroon colored plum of medium size, perhaps a little larger than Lombard—flesh greenish, tender, moderately juicy, flavor sweet, pleasant, free from stone. Promising as an early variety. The samples came to hand August 20th, from which accompanying photograph was taken. Mr. Walker states that the tree is an upright grower ; and that on the 19th of August he sold two bushels of fruit off it, so it must be productive.

SEEDLING PEACH, grown by M. Fitch, Grimsby, sample shown Sept. 13, 1898. A beautiful peach, quite equal to the Early Crawford in appearance, rounder in form, size 2½ x 2½ inches ; yellow with deep red blush on sunny side, and partially suffused with red in the shade. Down very perceptible to the touch, skin thick, and easy to separate from the flesh. Flesh yellow, fine grained, juicy, but not quite as much so as Early Crawford, melting, flavor luscious. Quality first-class for dessert and cooking. Value, first class for market, probably

a better shipper than Crawford. Season, September 10 to 15, immediately succeeding Early Crawford. A seedling worth testing.

IRELAND'S SEEDLING PLUM.—Samples of this plum were shown by Mr. A. W. Peart, of Burlington, in his experiment station collection; and previously, about August 15th, we had received samples of this plum from Mr. Peart, from which we secured the accompanying photograph. It is very pretty in appearance, medium in size. dark blue in color, with a thin greyish bloom; the stem is slender, inserted in a deep cavity; the suture is very distinct to the apex. The flesh is green, tender, juicy and of very good quality.

Coming so early in the season, this plum is of value in the amateur's garden, but it is too small to be recommended for planting in the commercial orchard.

SEEDLING PEAR; sample sent from Mr. Samuel Nelles, Grimsby, Sept. 27th, 1898, in mature condition, season just over. Mr. Nelles says it is the fruit of an old tree growing on his grounds at the lake, which bears full crops annually. The pear is medium in size, 2½ x 2¼, obtuse pyriform in shape, skin of about color of Bartlett; a peculiar feature is the long stout stack measuring two inches. Flesh a little coarse in texture, but flavor rich and pleasant, aromatic and moderately juicy.

SEEDLING PEACH, Mr. R. P. Smith, Hamilton, shows us another fine seedling peach, Sept. 27th, of about same season as Steven's Rareripe, and just in advance of Smock. It is very large in size, 3 x 3 inches, almost round in form, with distinct suture; skin yellowish green, with dull red blush on the sunny side. Flesh tender, juicy, fairly sweet, freestone. A peach that would be first class for the tea table served with cream and sugar. Its large size would also make it a valuable market peach.

FIG. 1444.—MR. IRELAND'S SEEDLING PLUM.

SEEDLING APPLE from Dr. J. S. McCallum, Smith's Falls, received Sept. 22nd, 1898. A most attractive apple.

Form, roundish oblate, 2½ x 3 inches; skin almost covered with deep red, with sparse grey dots, of large size. Stem stout, ¾ to 1 inch in length, in narrow deep cavity; calyx closed, in broad shal-

low, distinct basin, slightly wrinkled. Flesh firm, not mature enough to judge of its flavor. Season, winter.

This apple is very fine in form and color, and should make a fine shipper. Originating in Smith's Falls, it must surely be quite hardy. Dr. McCallum writes concerning the apple, as follows:

SIR,—I send you, per mail, under a separate enclosure, a sample of a seedling apple growing in my garden. Its uniform large size, good quality, and season (it keeps well until April with ordinary care), together with its good appearance, render it a desirable variety to cultivate, especially in the northern parts of Ontario, where it is so difficult to raise winter varieties.

I think it is a seedling of the Baxter's Red. It looks well on the tree—the bright color contrasting with the leaves.

THE OMAHA EXHIBITION.

NOW that exhibits of Canadian fruit are forwarded each week from various parts to the Omaha exhibition, and placed in charge of a Canadian, Mr. H. C. Knowlton, of the Province of Quebec, it will be of interest to have a few lines devoted to that exhibition.

These lines will be the more interesting because written by Prof. John Craig, so well-known in Canada, and recently appointed to the Chair of Horticulture in the Agricultural College at Ames, Iowa.

LANDSCAPE ARCHITECTURE.

When one considers the trying climate of the prairie States with their periods of sharp drought, hot winds and sudden changes of temperature, it is easy to realize the difficulty of securing harmonious landscape effects in a very limited space of time. Good judgment in selecting quick growing plants, a well prepared soil and plenty of water have achieved wonderful results. Cottonwood, willow and catalpa have been mainly used along the walks and drives. These trees are 15 to 20 feet high, and were transplanted during the winter when a large ball of frozen soil could be transported with the roots. The border planting is free and easy and distinctly nature-like in effect. While the result produced is charming, the observer is surprised to find on close examination that a comparatively common and positively cheap class of plants have been used. In the foreground verbena, phlox, dwarf nasturtium and asters are prominent, while in the background are found sunflowers, larkspurs, cannas, climbing plants and occasionally groups of castor beans, corn and pampas grasses. One of the most useful shrubs in these borders is undoubtedly the rosemary-leaved willow. The compact yet feathery growth and grey green leaves produce beautiful effects. The whole work emphasizes the superiority of the natural or group system of planting over the geometric and stereotyped plan. One system follows soft curves and irregular outlines; the other formal patterns and geometric grouping.

Many farmers vastly increase the labour of caring for the garden plot by following the latter system. In my opinion and experience a garden border is in every way preferable to a garden bed. The border is not fixed in character and may be expanded or contracted without damaging its effectiveness, and there is always room for a new plant and a place for it, whether a hollyhock or a harebell. Another advantage of the border is that should a weed appear—and they do occasionally—it is not so painfully apparent as in the formal bed, and may even sometimes contribute to the completeness of the

picture, for after all a weed is only "a plant out of place."

HORTICULTURE AT THE EXPOSITION.

It must be confessed that the finest thing about this department at this time of writing is the building in which the exhibits are housed. This is decidedly an "off" fruit year, and the word "off" is written everywhere. However, the majority of the Mississippi valley and the Pacific coast States are represented. As usual California is strongly in evidence, with her grape juices—also the fermented article—her dried fruits, and her citrus fruits. Oregon is becoming famed for the quantity and excellence of her prunes, and they are shown green and dried in abundance. Washington and Idaho are vieing with each other in the exhibition of big apples, plums and pears, like California the products of irrigated lands. Missouri shows some of her famous Ozark apples and peaches, while Colorado, Nebraska, Iowa and Illinois have varied collections from pecans through apples and peaches and pears. The fruit exhibit lacks in some of its essential educational features. Unfortunately, a few of the superintendents are appointed for other reasons than those of personal qualifications. The results are soon noted in faulty arrangement and the mis-naming of varieties. Such work does not reflect credit upon the State or the individual. In general the fruit is displayed, rather than exhibited in collection or variety. The display catches the eye of the uninitiated, but fails to attract the student of horticulture. I would not criticize this with undue severity, nor as being distinctively characteristic of this exhibition, but as being too much in evidence at exhibitions generally.

FOREIGN EXHIBITS.

It was pleasing to find Canada occupying a prominent place among the foreign exhibits. Her exhibit is at once the most attractive and varied in the foreign exhibit building. It was gratifying to find a Quebec friend in charge and actively engaged in laying out an attractive collective of Ontario and British Columbian fruits. The opportunity of making a good exhibit of fruits should not be allowed to lapse this year of scarcity. It seems a pity that Canada did not secure space for her fruit exhibit in the horticultural building. The opportunity for making a good impression is offered, and should not be lost. In passing, it may be noted that space can still be secured in the horticultural building, where if shown they will attract immensely more attention if shown in the more or less out of the way corners accorded to the foreign exhibitors. The Superintendent of Horticulture is Prof. F. W. Taylor, late of the University of Nebraska, and now Director of the Nebraska Farmers' Institutes. Mr. Taylor's energy and ability have largely contributed to the success of the Horticultural features of the Exposition. A few of the States have emphasized a particular fruit by making a striking display on one day. For instance, Missouri had her peach day when some carloads of peaches were exhibited and distributed gratis. On the 9th, Colorado made an exhibit of melons, water and cantaloupes, when fifteen carloads were given away. These were all grown in the famous Rocky Ford melon district of Colorado. In concluding a rambling letter I have no hesitation in saying that no one who can afford the money outlay should fail to visit this exhibition. It is beautiful, has many educational features, and is on a sufficiently large scale to be decidedly impressive.

STRAWBERRIES IN RENFREW.

SIR,—Seeing the articles in last month's HORTICULTURIST, I notice two articles from Prof. Hutt of O. A. C., Guelph, *re* strawberries. And as I fruited forty varieties this season, a few notes of my experience may also be of some interest to your readers.

For very early Van Deman easily leads on my ground, followed by Warfield and Haverland. The two latter varieties bore immense crops of very nice fruit, closely upon these came the Clyde which bore some immense berries and some very small ones and continued in bearing a long time, but it is of such a light color as to be unattractive in appearance; yet, I believe it is destined to be extensively planted on account of productiveness and size of many of the fruits. Beder Wood also did well. The old Crescent did fairly well as to productiveness, but the berries were not to be compared with those of many other varieties. Greenville bore an immense crop of very large berries, but are too soft for distant shipment. Bubach did well and still holds a warm place in my horticultural affection; also Williams, and when it is fully ripe is very nice, but unless fully ripe the green tips seriously affect its eating quality. Ponderosa bore a fine crop. I am somewhat afraid Salyer's Everbearing with me is the Haverland, the fruits is almost identical, but fruit on Haverland's was slightly larger and later in ripening and plant was more vigorous, and the row supposed to be Salyer's was more productive, in fact, I believe it bore the most fruit of any kind on my ground; I am not decided but that different location on my grounds caused the difference in the two varieties. It came highly recommended from an American nurseryman who guaranteed his stock true to name, but I fear he has blundered. It at least has not been everbearing with me. If any of your readers have fruited the Salyer's Everbearing I would like to hear his experience with it. Wm. Belt bore a fine crop of very nice fruit, many being very large but somewhat irregular in shape Splendid did fairly well but was not quite up to the mark for productiveness this year. Aroma bore a fair crop of very fine berries of perfect form and color.

Parker Earle bore only a fair crop. Mary bore a fair crop of extremely large berries, several measuring from six to seven inches in circumference. Brandywine has not been a great success except as a pollenizer for midseason pistilates. Enormous pleased me most of any variety on my ground. It began ripening about midseason and continued till the last, and such berries, I have repeatedly filled a basket with from eighteen to twenty berries, and such pretty berries. They are a very beautiful glossy light red, very attractive, and the berry has quite a long neck that facilitates the cleaning very much. I sold them for 10 cents a basket, when such berries as Crescent and Wilson would only bring me 6¼; and it was even more productive than Crescent with me. If it does as well next year I will plant more of it than any other. I do not wish to overpraise any variety, but really the Enormous delighted me this year. Brunette bore a small crop of most deliciously flavored berries.

Royal Sovereign and Gandy were the last to ripen, but both were so unproductive as to be unprofitable. Dew bore a fair crop of very small sour berries. Bouncer bore a small crop of fair sized, sour, seedy berries. Do not know why this variety or the Dew were

ever introduced. Noble was of no value, neither was Downing. Glen Mary did not hold up its recommendation for productiveness. Enhance bore a good crop, but did not like appearance or quality of the fruit. Dominion and Jumbo were identical, fruit where developed, nice color and shape and good of quality, but plant not productive and rusts badly. Gardner bore a heavy crop of large fairly attractive fruit. Eureka bore an immense crop, but fruit was not as pretty either in color or form as many others. Sunnyside bore a fair crop and some of the largest berries, one measuring seven inches in circumference, but berries are irregular in form and quite acid. Commander bore a fair crop of very nice berries. Bismarck bore but a very small crop, but the fruit was very firm and of fine form. I had also two seedling varieties from the Central Experimental Farm which bore a small crop of very fine flavored fruit. Besides this I have fruited the wonderful little White Alpine two years. It bears continuously all summer, and the fruit is white when ripe and when fully ripe is of most delicious flavor. I got my last picking last year on Oct. 20th, but got a few more ripe berries on Nov. 4th.

The two seedling varieties from the Experimental Farm, also Dominion and Jumbo and Burnett, gave a large number of imperfectly developed berries, no doubt due to improper fertilization caused by cold weather at blossoming time.

Growing them as I do, for plants I give high cultivation the season they are planted and take all plants from ground set the previous spring, and after I get what plants I want, or after the first season I give only ordinary cultivation.

I will have the following varieties of fruit next season for the first and will then report on them. Marshal, Rio, Saunders, Lovett, Seaford, Cyclone, Bisel and Graham's Seedling.

W. J. KERR.

Renfrew, Ont.

COLD STORAGE SHIPMENTS.—The first returns for this season's shipments have been received and are quite satisfactory. Bartlett pears sold for seven shillings a 3rd bushel case, Red Astracans five shillings, and Duchess four shillings and five pence for the same case. These results are quite encouraging, and we believe the packages and the packing now employed are even superior to the Californian. Our English salesmen say they are just the packages for the English fancy trade.

SMITH'S FALLS FLOWER SHOW. — The Smith's Falls Horticultural Society held their Second Annual Flower Show in the Town Hall, on the 13th and 14th inst. The improved quality of the exhibits this year plainly demonstrated that the show was proving an educator, at least so far as developing the floral tastes of the community. The children were admitted free in the afternoons, and a charge of 10 cts was made for adults. The receipts covered the expenses with the exception of about $10. An orchestra was present in the evenings, when a brief programme of music, singing and short speeches was presented. I notice that in most places thore is a hesitancy about holding flower shows, on account of the trouble they entail. We find the trouble not so great as was anticipated. The town is divided into four sections, and two ladies are detailed for each, who call on those having plants, and make their returns. The collectors get these lists, also a quantity of cedar splints, split in the end, and small cards. The name of the plant, and the owner's name are written on the card, which is inserted in the splint, which is in turn stuck into the pot. Two spring waggons with two men to each did the collecting almost in the forenoon on the first day of the show, and the delivering occupied about the same time the day after it was over. Not a single mistake was made, and not a plant was injured.

WM. M. K., *Sec.-Treas.*

BULB GROWING: SELECTION OF VARIETIES AND THEIR TREATMENT.

Prof. H. C. Irish, Shaw School of Botany, St. Louis, Mo.

Fig. 1445—Narcissus Horsfieldii.

OF the many factors tending to make the home surroundings beautiful, probably none can accomplish desired results more easily and cheaply than a luxuriant growth of bulbs, artistically arranged in the sitting room window, or beautiful clusters placed in different parts of the lawn. It is not difficult to secure a pleasing effect in either situation. The operations are not only simple, but most bulbs appear particularly adapted to various conditions, and even unfavorable conditions are, as a rule, quite easily overcome. The work is no longer confined to wealthy amateurs, commercial florists, experiment stations or botanical gardens, but any bright, thrifty, well-to-do person, with a few rods of land at his command, may be the happy owner of many choice flowers. Let these institutions cultivate rare and costly plants which require careful nursing; there are many others just as beautiful which are within the reach of all who desire them.

Conditions vary so widely with different persons, it is impossible to make any satisfactory set rules for all to follow, even in the general culture of bulbs, and much less is it possible to select sorts agreeable to the varied tastes. I will, therefore merely suggest methods which appear to me most convenient to the greater number and within reach of many others.

Bulb growing naturally divides itself into two classes: First, window culture, or forcing; second, outdoor or garden culture. Window culture requires a little more labor, but the compensation is correspondingly greater, as the blossoms mature at a season when vegetation is naturally taking her rest. However, no more time need be spent caring for these, and frequently not so much, as with the geranium, a plant almost universally grown. Moreover, many of our most easily grown bulbs are not to be compared with the geranium in beauty and delicacy of bloom.

Hyacinths and the Chinese Sacred Lily are frequently forced in water, or by glass culture, as the process is usually termed. Glasses made especially for hyacinths, each holding a single bulb, may easily be obtained from florists or seedsmen. There are various designs and sizes, some having two more compartments, for as many bulbs. The glass is sometimes colored, to exclude bright light from the roots.

About November 1st a bulb is placed in the top of the vase and the glass filled with water, even with the base of the bulb. Set away in a cool, dark place until roots are three or four inches long, when they may be gradually brought to the light. Instead of immediately starting the bulbs in water, some growers recommend plunging into wet sand, to one-half their depth, keeping moist, and in a cool, dark place, until roots have formed about an inch long, when they are placed in glasses. Either change the water occasionally, being careful that the water added is of the same temperature as that removed, or place a small piece of charcoal in the glass, which will keep the water pure.

For this purpose always select the largest and most firm bulbs, as they depend largely upon their own resources for nourishment. The single varieties of hyacinths are better for forcing, as they bloom earlier and seem to endure the unnatural conditions better than double sorts. Further than this, as the varieties differ, principally in color, a selection depends upon the taste of the grower.

The Chinese Sacred Lily is even more easily forced in this manner. Several are grown in each glass or earthen vessel, which has about one-half an inch of gravel in the bottom, on which bulbs are placed, and the space around them filled with fine pebbles to the depth of an inch. Otherwise treated as hyacinths, they may be brought into bloom in a month, or even a shorter time. Other narcissus are sometimes grown in water, but with greater difficulty.

Most bulbs are quite easily forced in pots. The best time to plant them is about the middle of October. Use five or six inch pots, with a little drainage in the bottom. Of the large bulbs only one can be planted in each pot, and of the small ones from three to eight. Larger pots, or even pans, may be employed, with several more bulbs planted in each, but much better effect in arrangement can, as a rule, be secured by using smaller pots. The best soil is a light, sandy loam, enriched with cow manure and leaf mold.

In potting large bulbs, it is well to fill the pots about two-thirds full of the above mixture, put the bulb in place

and fill with sand to one-third its height, adding an equal amount of prepared soil, thus leaving one-third of the bulb exposed. Leave the lower soil loose, but firmly press the surface about the bulb. After the planting is finished, thoroughly moisten the soil, set away in a cool, sheltered place and cover with coal ashes two or three inches deep, and over this a layer of coarse manure, leaves or other litter, to keep from freezing and to prevent the tops from drying out. A strong, healthy root growth will thus be secured, the time ranging from four to eight weeks, according to the nature of the bulb. The root condition may easily be ascertained by turning out the soil, and whenever the pot is well filled with roots, it may be gradually brought to the light and heat. Upper growth may have started, and will now push forward quite rapidly. Some of the plants may be held back and not brought into the light for three or four weeks, thus securing a succession of bloom. When brought to the light it is better to keep in a temperature not exceeding sixty degrees, as the plants will remain longer in healthy bloom; or, if it must be kept warmer, the soil should be kept more moist than would otherwise be necessary. When the blooms fade, the bulbs are usually discarded. Should one care to take the trouble, all bed hyacinths may quite easily be propagated by allowing the foliage to ripen, then keep pots dry until autumn or spring, as the case may be, when they should be planted in any out-of-the-way place and left for two years, when the bulblets will be of sufficient size for bedding.

The following sorts are among the best for pot culture, together with a few suggestions for the special treatment of each:

Hyacinths, grown singly in five-inch pots. Select single flowered varieties and those designated by most catalogues as second size, and give equally good results.

Early Flowering Roman Hyacinths, grown four or five of the same color in a pot.

FIG. 1446.—DUC VAN THOL.

Early Flowering Tulips, three to five in each pot. The single varieties are more brilliant, but do not remain so long in blossom as the double; hence there is reason for having both forms represented. The Duc Van Thol are especially good, either single or double, my preference being for the latter.

Narcissus, four or five in a pot, Early Double and Roman Paper White being the best forcing.

Jonquils, four or five in a pot, and have both single and double represented.

Crocus, five or six in a pot. Have yellow, white, blue and striped, each represented in different pots. In planting, fill the pot with soil, even with the top of the bulb.

Allium Neapolitanum, Glory of the Snow (chinodoxa Lucillae), Freesia refracta alba, each, seven or eight in a pot and treated the same as Crocus.

For garden culture we have spring, summer and autumn flowering bulbs. Those already mentioned for forcing, together with scillas and snowdrops, are among the best that bloom in spring; lilies and gladioli in summer, and the autumn species of Crocus and Galanthus, and Colchicum autumnale for autumn.

There are other valuable ones, but a collection of one or more varieties of the above will give a maximum effect, and this is only secured by a mass of individuals of one species, or, frequently still better, one variety in the same clump. Hence I venture the assertion that it is far better to have 100 bulbs of a single sort than ten sorts of ten bulbs each.

The spring flowering bulbs, and most of the lilies, may be planted any time from the middle of September to the first of December, better about October 15th. Methods of arrangement must be governed largely by the various tastes and different surroundings. Isolated formal beds or rows may have their places against walks or buildings; massive clumps scattered here and there, especially as foreground for shrubbery, are very becoming; smaller groups may add grace and beauty when properly placed among other plants in the border; and lastly, certain bulbs, such as crocus, snowdrop and glory of the snow, do quite well planted in sod, without further care or cultivation.

In preparing a place for bulbs, the first and perhaps most important consideration is drainage. Other things in their favor, bulbs will succeed quite well in rather poor soil, but the worst treatment that can be given them is a wet, undrained situation. If the location is naturally well drained, spade up the area to be planted twelve or fifteen inches deep, working in a good quantity of well-rotted cow manure or other non-stimulating fertilizer. Bulbs will do well in almost any soil, but a light, rich, sandy loam is the best; and if naturally heavy, add leaf mold or an extra amount of manure, and in any event, when planting, it is always best to apply a large handful of sand to each bulb, to prevent rot. Low, wet, undrained places should be renovated by excavating eight or ten inches deep and covering the bottom with three or four inches of broken brick or stone, and above this about a foot of soil, thus raising the bed six or eight inches above the surrounding level.

All bulbs of the same variety in a single clump should be planted the same depth, otherwise they will mature at different periods and the best effect lost. To do this accurately it will be necessary either to remove the surface of the bed as deeply as required for planting bulbs, setting them the proper distances apart and replacing the covering, or by the aid of a dibble or any round-pointed stick with a cross-bar fastened as far from the point as the depth to plant, and it will be comparatively easy to make holes, into which bulbs are to be planted, all the same depth.

When desirable to mix fast and slow growing varieties, plant the more rapid growers deeper, or the two may be separated into central and side portions of the clump, usually better with earlier ones in the center and late varities next the border, when the difference in flowering will be less conspicuous. It is thus an easy matter to prolong the flowering season of a particular sort by planting one clump shallow and another deep, or the center of one clump more shallow than the side, or one clump located in a more shady place than the other. Again, it is well to mulch the beds with leaves or coarse manure for hardy as well as tender sorts, so that an even growth may be secured and the bulbs be prevented from heaving out by winter freezing. Mulching is especially valuable for preventing freezing and the consequent lack of root growth of late-planted bulbs. As a rule the mulch should be removed some time in March,

or whenever severe winter weather is past; by this time upper growth will usually have started. In exposed places protection from heavy, late frosts by a light mulch or mats is beneficial.

When the flowers have wilted they should be cut away, no seeds being allowed to ripen, so that all available strength may be used in developing the bulbs or bulblets. For the same reason leaves should not be removed until they begin to fade, after which the space occupied by spring flowering bulbs may be utilized by planting tender, shallow-rooting annuals, such as

FIG. 1447.—ASTER.

Portulacca, Dwarf Petunias, Asters, Verbenas, etc. Further treatment depends on the kinds grown, hence it will be necessary to consider their special requirements.

Spring Flowering Snowdrops are the earliest and among the most hardy. Their exact time of blooming, as with other plants, depends upon local climatic conditions. At the Missouri Botanical Garden, last winter, in a partially shaped situation, many were in blossom February 22. The flowers

FIG. 1448.—SNOWDROP.

are pure white, solitary, graceful, and possess an agreeable perfume. For delicacy of bloom the common single variety is, perhaps, best, and for size, the Giant Snowdrop (*Galanthus Elwesi*). For clumps plant about two inches deep, and the same distance apart. They propagate quite readily from offsets, forming a solid mass if left two or three years. No further care is necessary until the bed becomes overcrowded, when they should be taken up and reset. These are sometimes planted in sod or wild portions of the garden.

Spring Crocuses appear a little later than snowdrops, and have larger and more conspicuous flowers, the numerous varieties giving many shades of white, blue and yellow. Plant one or two inches deeper than snowdrops, as bulblets are formed above the old bulb and will eventually work themselves above ground, when they should be taken up and replanted. Otherwise they are treated the same. Of the white varieties Mont Blanc and Caroline Crisholm are good; of the yellow, Large Yellow and

Cloth of Gold; of the blue or purple, Baron Brunnow; and of the striped, Albion and Sir Walter Scott.

Scilla Sibirica and Glory of the Snow, are equally hardy, and may be planted and treated in the same manner as snow drops. They bear a mass of richly colored flowers, which are valuable for cutting, as well as being effective for edges, or in clumps of a hundred or more.

Hyacinths are less hardy than those already mentioned, hence mulching is essential for winter protection, unless the bulbs are planted very deeply. For natural effect no better place can be found than groups in miscellaneous border, intermingled with other plants. Where the soil is heavy plant about three inches deep, but for light loam five inches is better. They may be left in the bed for two or three years, but each season will become less brilliant, as the finer and more delicate specimens die, leaving only the coarser and less desirable ones. A better way is to replant in some out-of-the-way place immediately after flowering, and when leaves decay take up, dry a few days, and keep in a cool cellar until ready for autumn planting. Propagation is more difficult that with smaller sorts, and unless one has considerable time, it is better to procure at least a few bulbs each year, directly from dealers, who in turn purchase them in Holland, where most of our bulbs are grown. Propagation may be accomplished by making two or three cross-cuts in the base about one-fourth through, from which off-sets are formed. These are separated, planted in nursery rows, and treated as old bulbs two or three years, when they are planted in beds or borders. The many varieties represent more than a dozen distinct shades of color, which should be kept in separate masses or distinct sections of formal beds; for example, a row of reds next the edge of a bed or border, with blue in the center and white midway between, and intermediate colors for other rows. Both single and double varieties should be represented. For natural effect the former are especially desirable, as the heads are less compact, and individual blossoms appear more graceful. Roman Hyacinths, with their many elegantly spreading flower stalks, are hardly less desirable than for forcing.

If one of these three forms is to be omitted, let it be the double, there being little choice between the other two.

The Giant Hyacinth (*Galtonia candicans*) was suggested to me by Professor Trelease, who had noted it at the Arnold Arboretum in Boston, as perfectly hardy and very ornamental. It attains a height of five or six feet, the solitary spike bearing from twenty to thirty flowers, which appear in summer. It is considered a valuable addition in places where plants of its size are wanted.

Tulips are planted in the same manner and given the same general treatment as hyacinths, except that they are set an inch shallower, as the bulbs are smaller; now are they taken up and replanted during the summer. When convenient, plant in a place partially shaded, as the flowering season will be considerably lengthened. Protection from the hot sun may also be afforded by spreading a light canvas three or four feet above the plants. Double varieties continue longer in bloom; otherwise they are inferior to single sorts, and as the flowering season can be lengthened, as previously mentioned, by different modes of treatment, I would omit double sorts unless planting for variety. The Duc Van Thol varieties are equally as valuable in garden culture as for forcing, and

N. poeticus. N. incomparabilis. N. Trumpet major

FIG. 1449.—

may be had in while, yellow, scarlet, vermillion and variegated. For late flowering, satisfactory colors of Bizarre may be selected, also a few from Bybloomen. The former has almost perfectly shaped blossoms, with yellow ground color, striped with crimson, purple or white; the latter has white ground color, and various markings. Parrot tulips are brilliant, as well as giving a variety of forms, and should not be omitted from a general collection.

Narcissus possess desirable qualities not found in other bulbs. They not only have an agreeable fragrance, but remain fresh a long time when cut. Daffodils, Jonquils and the Chinese Sacred lily represent certain types, other forms being known as narcissus proper. The Polyanthus type, to which the Chinese Sacred lily belongs, is not hardy, and cannot, therefore, be especially recommended for garden culture, although it may succeed fairly well if given thorough winter protection. The other types are perfectly hardy and extremely easy to grow. Their unsymmetrical habit of growth well fits them for the natural border, or among miscellaneous plants. Plant them three or four inches deep and from four to six inches apart. Do not replant during their resting period, as they succeed far better when left to themselves. Narcissi propagate quite rapidly from offsets, usually forming a solid mass the second or third year. The following varieties are generally considered best: Daffodils, Horsfieldii, Golden Spur and Van Sion; Jonquils, Single and Campernelle Rugulosus, and the Poet's narcissus (Narcissus *poeticus ornatus.*)

Gladioli are, as a rule, less popular than many other bulbs, owing to the fact that they blossom in late spring or early summer, when so many other flowers are at their best. They form a desirable acquisition in a collection and are especially valuable for parlor decoration, as they remain fresh a long time when cut. Autumn planting is accompanied with some danger from freezing; however, the plants are brought into bloom earlier by taking extra care for

suffieient protection against severe freezing. When early flowers are not an object, better to plant in April, and the following October take up and keep in a cool dry cellar away from frost.

Lilies appear to have no superior in popularity, and but few plants are better known. They cover a vast range in variety of form and color, the different species furnishing an abundance of bloom a considerable portion of the season. Candidum, or the Annunciation lily, is the oldest and the general favorite. It blooms in June, sheds leaves in July or August, and again begins growth in October, root action continuing through the winter. They should be planted in August or September, six inches deep, requiring no further care for years, although a summer mulch may improve their quality by keeping ground cool and moist. Other desirable lilies are Tigridum *flore pleno*, speciosum rubrum and excelsum. These are planted in autumn, otherwise treated as Candidum.

There are several kinds of autumn flowering bulbs, although none, I believe, are very generally planted. In Garden and Forest for November 17th, 1896, Mr. J. N. Gerard, of Elizabeth, N. J., mentions two Grecian forms of our common snowdrop, Olgea and Octobrensis, which flower in autumn, the former appearing in September, followed by the latter in October. He further says that "under the prevailing low temperature their blooming period is prolonged, and they still ornament the border." In addition to these there are several species of the true late-blooming crocus, as well as the one commonly catalogued as the Autumn Flowering crocus, but which really belongs to a different genus—*Colchicum autumnale*. The latter can be distinguished from the true blue crocus only after careful examination. Their similarity, together with the fact that Colchicum blooms more freely, makes the latter more desirable. They should be planted in August to secure bloom the same fall; plant about six inches deep, otherwise giving the same treatment as for crocus.—Rept. Mo. H. Soc.

HARDY PLANTS.

HARDY plants alone possess much interest for me. Plants in pots savour too much of the pet-bird idea. Keeping a loose domestic dog or cat is one thing, but keeping a lark or even a canary is quite another. Besides, I like my plants to establish relations with definite spots in the garden. It is pleasant to feel that the fading Crocuses will come up again in the same spot next year; that the Snowdrops may be expected to brighten the base of the Pear tree each spring with increasing effect. Therefore I have planted my garden with Roses in great variety, of the best kinds (not Hybrid Perpetuals and Teas only, but also the sweet old summer Roses, and many of the single species, such as alpina, acicularis and bracteata, with all kinds of Daffodils, Narcissi, Irises, Anemones, Primulas, Cyclamens, Crocuses, Tulips, Gladioli, Snowdrops, Aconites, Colchicums, Columbines, Campanulas, and the like. I hope to have flowers out of-doors the year through, except perhaps in the very heart of winter.—H. R., in Gardeners' Chronicle.

A JARDINIERE TABLE.

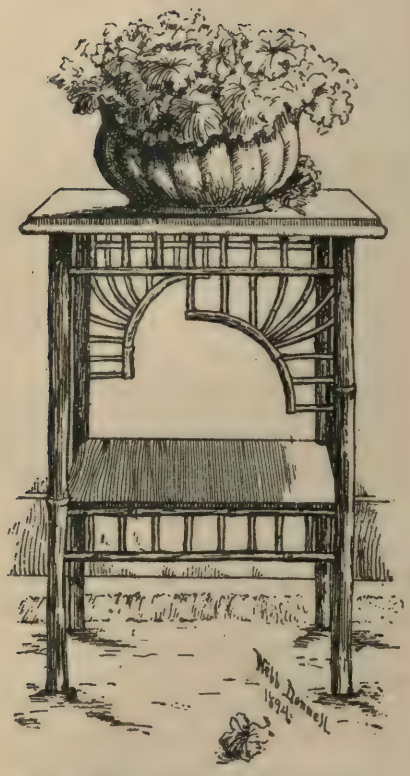

FIG. 1450.—A JARDINIERE TABLE.

NOTHING in the way of home decorations, or as a setting for the flowers dear to one's heart, is prettier than the jardinières that are now made in most attractive shapes and in most beautiful colors. These articles in themselves are in the highest degree decorative, and when filled with a profusion of bloom they leave little to be desired—unless, perhaps, it be an attractive little table just suited to show off the dainties of the jardinière and its burden of blossoms!

The illustration accompanying this shows a table that, in its lightness and freedom from the stiffness that is common with solidly-built tables, or plant-stands, becomes a very appropriate resting-place for such a flower-laden receptacle. The top and the shelf below are of cherry, left in its natural state, and so unspoiled by the vivid red stain that is so commonly given this naturally beautiful wood. The rest of the table is made of bamboo, the spindles, cross-pieces and the legs varying so completely, but gradually, in size, that there need be very little waste in cutting up a bamboo pole for this purpose. The top of the table being somewhat thick, permits sockets to be made in its under surface, and cut to within a half-inch of the upper surface, into which the legs are snugly fitted and thoroughly glued. If the rest of the frame-work is put together evenly and strongly, the table complete will be very stiff and strong. Care should be taken to have it rest with perfect eveness upon the floor.

I have said that jardinières are made in beautiful shapes and colors. This is true, but it is unfortunately true that they are also made in colors and with decorations that are decidedly the reverse, and their ugliness is only made more prominent by their association with dainty blossoms. Good taste is therefore of special importance here.

The jardinière table that is figured ought to be easily within the constructive powers of anyone at all handy with tools, and the making of a bit of attractive home furnishing adds much to its possession.—The Country Gentleman.

The Canadian Horticulturist

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ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

Notes and Comments.

MR. ALEXANDER MCDONALD ALLAN, has been appointed Superintendent of Horticulture for Canada at the Paris Exposition to be held in Paris in 1900. This gentleman needs no introduction to our readers, having been for a long time prominent in our association for some years as director, and then as president. He is son of the late Rev. Daniel Allan, and all his life has shown a live interest in horticulture, and has been widely known as one of the most extensive apple shippers in Canada; so much so that at one time he was dubbed "The Apple King." He had charge of Canadian fruit at the Colonial Exhibition, and has in this way gained a great addition to his knowledge of fruits. We have no doubt that Canada's interest will be well served by this appointment.

DR. SAUNDERS, Ottawa, was present at the Industrial on Monday and Tuesday. From what he saw in Winnipeg he has reason to believe that there is an opening for Ontario Concord grapes delivered in proper packages and in good condition.

Regarding fruit in British Columbia he says to the press at Ottawa:

The fruit orchards at Agassiz are doing excellent work in testing all the obtainable varieties of fruit from many quarters of the globe, with the object of ascertaining what kinds are best adapted to the climate, and which give the most profitable returns. Many of the new sorts, not heretofore tried—especially those from Europe—are giving excellent results and some of those which have proved particularly profitable, are being rapidly multiplied. The number of varieties of large fruits now under trial is 2,004, and of small fruits 412, making a total of 2,416. The four orchards which have been planted on the side of a mountain at the back of the farm, at different heights from 150 to, 1100 feet above the valley, continue to give excellent results. About 900 trees are now growing in these orchards, including some of the most promising varieties of apples, pears, plums, cherries and peaches, and the trees continue to manifest remarkable health, and the foliage and fruit are much less liable to injury from parasitic fungi than those growing on the valley level, the fruit being remarkably clean and free from spot. The usefulness of the land in such situations for orchard purposes having now been demonstrated, many farmers are following the example set by the Experimental Farm, and are utilizing these hitherto waste spots by converting them into orchards.

Question Drawer.

The Cooch Plum.

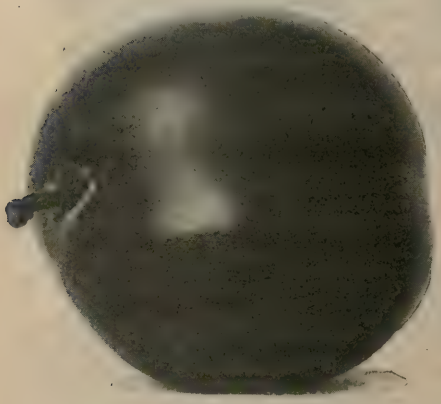

FIG. 1451.—OTTAWA PLUM.

1029. SIR, — An enterprising amateur gardening friend of mine here has brought me some specimens of a plum which he has grown, and I think so much of them that I have taken the liberty of forwarding, by to-day's post, a couple for you to pronounce upon. The size, color, shape and flavor impress me very highly. What do you think of them? They are early, too, and that is very important for us, so far east and north.

The grower tells me he has raised the tree from seed planted nine years ago, and this is the first year of bearing; it bore 40 plums, all of a very uniform size.

Does this plum resemble any other too closely to prevent its getting a distinctive name? If it be entitled to a name, it ought to be called the "Cooch"—the name of the grower.

Although I have been one of the oldest members of the Fruit Growers' Asso'n, yet, as a plum grower, I have had so little success that I cannot pretend to speak with much authority on *plums*. Kindly let me have a line from you, giving me your opinion of the specimens I am sending you.

DAVID MATHESON, *Ottawa, Sept. 9th.*

FIG. 1452.—SECTION OF OTTAWA PLUM
Cut in suture.

The plum measures about 2 inches long by 1¾ in width; somewhat one-sided, with a very distinct suture on one side, the form is somewhat broadened toward the apex. The stem is short, about half an inch long, inserted in a shallow cavity. Color of skin very dark red, with greyish bloom.

Flesh greenish yellow, moderately juicy, soft in texture, moderately sweet.

Quality very good for cooking and market purposes. Season late. Sample photograph came to hand Sept. 10th.

Seedling White Grape.

1030. SIR,—I shall take the liberty (on Monday, 12th inst.) of sending you by mail a bunch of grapes from a seedling vine, now 3 years old. Will you kindly give me your opinion of its value, quality, etc. The grapes on the vine, from which the sample to be sent was taken, began to ripen on 20th ult., or about with the Early Ohio. I have also a number of seedling peaches, which are quite early—gathered two weeks ago from one tree.

O. FITZALWYN WILKINS,
Bridgeburgh, Ont.

SEEDLING GRAPE. — The bunch of grapes came duly to hand on the 12th September, but many of the berries were crushed. The bunch is of a good size and form, the berries white, round, of medium size; the flavor agreeable, somewhat foxy, but much sweeter and pleasanter than Concord; the skin is thin and tender, and the pulp is tender

and separates from the seeds almost as easily as Brighton. Ripening as early as the 20th of August, it should have some value.

Ginseng.

Question 1028.

I would suggest that you write regarding Ginseng to Mr. George Stanton, Chinese Ginseng Farm, Summit Station, N.Y., Onondaga County, who appears to be the largest experimenter and dealer in America in that line. Dr. Geo. C. Butz, Horticulturist of Pennsylvania State College, writes me that he has visited Mr. Stanton's place, and found there the most decided demonstration of the possibility of the cultivation of Ginseng.

I understand that Mr. Stanton will gladly supply all information desired.

C. C. JAMES,

Deputy Minister of Agriculture.

Grafting.

1031. SIR,—Can you send, or refer, me to any bulletins or special work on Grafting and Pruning fruit trees? If not, would be very grateful for a few points of instruction, especially on the former. What is the proper time? How are trees (8 or 10 years old) pruned for grafting? Best composition for covering the wounds, etc.? Pardon me for troubling you, as I do not know where else to look for information.

J. W. HAY, *Sheffield.*

Top-grafting is a most important operation where an orchard has been planted to varieties of fruit which are unprofitable. In fact, the markets themselves seem to change from time to time, and this is the easiest method of keeping pace with the changing demand.

The time for grafting fruit trees is in spring-time, about the time growth begins. Plums need to be done quite early, before the buds begin to burst; pears may be left later, and apples last of all. In the same order we might mention them, as regards the difficulties in the way of success, beginning with plums, which are the most difficult.

The first important requisite is the cions for grafting, which must be cut in advance, while still perfectly dormant, and packed away in a cool place, or buried in sand or green sawdust, where they will remain plump, without making any growth.

Then select a good many fair-sized limbs, evenly distributed over the tree, limbs two or three inches in diameter, and cut them off, well out, leaving back of them a good supply of twigs and foliage. Cut with a fine sharp saw, and then set the cions, using a grafting chisel to open the split to receive the beveled end of the cion as shown in fig. 1449. The great point is to unite the cambrium or inner bark so that the growth can continue. The cut surfaces must be carefully protected from the air by grafting wax, which is made by heating up together equal parts of rosin, beeswax and tallow; this is thrown into cold water, and then, with greased hands, worked up into a soft ball, convenient for handling.

FIG. 1453.—

Pruning of the peach is best done this month, when some progress will be made in healing before winter, or else left until May, just as new growth begins. Apples and pears may be pruned at any time when the trees are bare of foliage; but in no case do we advise cutting large limbs, which usually lead to rotting of the heart, but rather a liberal cutting off of the smaller branches.

Winter Protection.

1032. SIR,—Will you kindly tell me how to protect a third year Purple Barbary, also a Hydrangia? What covering will be best for pansies and roses! Is the last of October the best covering time?

EMMA CORSE MILLS, *Iroquois.*

Reply by Prof. H. L. Hutt, O. A. C., Guelph.

The purple-leaved Barbary is very hardy and should require no protection in Ontario. It has never been injured at Guelph during the coldest winters. One of the most satisfactory coverings for shrubs, roses, or even pansies, is cedar or spruce boughs. For shrubs and rows the boughs should be sharpened and stuck into the ground and tied closely about the bushes. On the pansies they should be placed thick enough to hold the snow, which is the best covering. It is well to keep the protection off as late as possible to allow the wood to harden. We do not put on covering before the end of November.

In Re Plums.

1033. SIR,—I am sending herewith by mail, a parcel containing three samples of plums. Numbers 1 and 2 I am sending for correct names, and number 3 to ask your opinion as to what has caused them to wrinkle up as they have done. I hope I am not asking too much, and will feel greatly obliged if you will kindly give it your attention.

My plums are a very heavy crop this year, too heavy in fact, especially the Lombards,—which are breaking the branches badly, from over-loading.

Hoping to hear from you at your convenience.

D. S. MACDONALD,

Glendyer, C. B., Nova Scotia.

Reply by J. K. Gordon, Whitby.

Having carefully examined the three varieties of plums referred to by Mr. MacDonald, my opinion thereof is as follows:—The round oval green variety is unknown to me, and I think that it is not grown in Ontario. In appearance it resembles the Reine Claude de Bavay, and at first sight it would be pronounced that variety; but the pit is much larger and of a lunate form, and differs widely in these respects from the Reine Claude. I think, however, that it is a plum of much value.

The other green variety is of oval form and resembles closely Coe's Golden Drop, but is not it, and though I have grown it for a number of years past, I do not know its correct name. It is, so far as I know, grown in Ontario only about Whitby and Oshawa, and is known under the name of Vail's Seedling. It was discovered in the following manner: a plant of it, a few inches high, was found among the straw packing in a bundle of fruit trees received from Nova Scotia, about fifteen years ago, by a gentleman named Ashe, residing at Oshawa, and it was planted by Mr. Ashe as a matter of curiosity, and Mr. Vail having afterwards procured a tree of it, named the plant Vail's Seedling.

This so-called seedling is identical with Mr. MacDonald's, and differs from Coe's Golden Drop in the pit, in the insertion of the stem, in the growth of the tree and in the foliage—inasmuch as the pit is of lunate form and larger, and the stem is placed a little to one side of the plum. While the tree is more robust in growth and attains a larger size than the Golden Drop, and its foliage is larger and with a glossy waxen looking surface, somewhat like that of the Quackenbos or Glass' Seedling. It is equally fruitful and of as good size and quality and of the same season of ripening as the Golden Drop.

Then as to the small wrinkled variety, I cannot name it. It appears to be either a Damson, or a dwarfed specimen—through disease—of the Lombard, or some other variety. The pit and the stem-end somewhat resembles the Lombard; but I think it has been submitted by Mr. MacDonald by way of a conundrum, as it appears to be of little or no value.

Open Letters.

A Canadian Fruit Grower in Alabama.

SIR,—I formerly resided in St. Thomas, Ont., and was a subscriber to your Journal for eight years. For the past three years or nearly I have been engaged in the vineyard industry.

This is an ideal country for grape and peach culture ; situated in the eastern part of Ala. The Topography is very rolling, many parts so steep it has to be cultivated by hand. It is all of a volcanic formation, red soil, with a great deal of quartz rock of various sizes from that of a pea to a bushel basket, and much of our soil is composed of rotten rock that pulverizes to dust when cultivated and said rock contains a large percentage of mica-like substance. Frost only penetrates about 1 to 2 inches ; ice on still water ½ to ¾ inch. Our season of sunshine from last frost to first gives ample time to mature cane and crop. A man can work outdoors the entire year without coat or gloves. The summers are pleasant, never warmer than 96°, it is always cool in the shade as we have as a rule always a pleasant breeze. Nights cool. I have slept under a single blanket every night this and last summer. We are on these "uplands" 1,250 feet above sea level, air clear and invigorating. We have, what was on January, 1895 a virgin forest, 3,000 acres planted to grape vines. The timber on land is principally what is known north as "Georgia Pine," also various kinds of oak, hickory, chesnut and gum trees. Wild blackberries grow in the valleys in profusion, superior in size and quality to any I ever eat north. Natives peddle them at 8c. to 10c. per gallon. There are scarcely any negroes in this county, they can't keep any land in this colony which is composed of people from the Eastern and Western States with a few from Canada.

The size and quality of our grapes and productiveness of our vines is not excelled, if equaled, in the U.S. They are largely Concord, Niagara, Delaware. For shipping we also grow several varieties, for wine principally, that are indigenous (Munson's Hybrids) to the South ; also Scuppernong's native grape. We make everything required for picking and shipping except baskets ; will put in basket plant this fall. Our crop is nearly all gathered. Our first shipments about July 25th. We harvested crop this year from about 1,300 acres.

As there are but a very few here that have any experience in shipping grapes, and our crop being a good one for what you might term our first crop, found us unprepared to handle it with that expedition necessary. Here all grapes this year have been brought to one packing house and packed. They are unable to pack fast enough. Confusion is too great to be expeditious. There are 85 in packing house, sorting and packing, etc., and this system causes too much handling of the grapes. What I want to learn is what is the system that governs the packing and shipping of grapes or other fruits in the grape and fruit (Niagara) belt, Ontario.

If you have a shippers' organization would be pleased if you could supply me with a copy of their by-laws. Is packing all done at one place or does each do his own packing (and brand his package), subject to inspection at point of shipment

As we must get organized before another season, would be pleased if you could assist as outlined above.

I often thought of writing to HORTICULTURIST, but did not know that anything I could say of this region would be of interest to your readers. I wrote a home paper once in reply to a number of enquires.

I did not write this for publication as you can see. Still if you think any part of it is interesting you can use it. While this is a fine climate and I like it here very much I still have a warm feeling for Ontario, where I spent 42 years of my life. When I left Canada I left to go into business in Chicago as my family were all there. One year proved disastrous. Hearing of this I looked it over and located, and I think the outlook to-day is better than any time since we started this colony.

D. NEILSON.

So far every fruit grower in Ontario packs and ships his own fruit. The Niagara District Fruit Grower's Stock Company appoints reliable agents in all the principal towns, who receive fruit on consignment. All stockholders receive daily market reports, and thus are guided in their shipments, and frequently are able to load cars for special points.

Packing companies who would pack and ship for growers, and who could succeed in establishing a confidence in their method would no doubt receive much patronage, but we doubt if growers could manage a co-operative packing business to advantage.

The best scheme we can think of is for every dozen or more growers to combine and build a cold storage at shipping point ; to engage a competent man in charge of this storage who should be authorized to inspect every tenth package, and see that each shipper was packing according to an agreed standard. If he was not, the inspector should have authority to reject the whole shipment of the faulty shipper for that occasion.

As soon as a car load is made up the man in charge should see after a refrigerator car, and loading of the same.

Reports Should be Reliable.

SIR,—In the Sept. No. of the HORTICULTURIST, one J. Henderson, of Stittsville, finds fault with the accuracy of my report on fruit prospects in your July Number, with special reference to plums and strawberries. Evidently your correspondent's knowledge of plums is limited to the native wild plum of country gardens and fence rows, which has undoubtedly been much subject to blight of late years, but as I did not mention this type of plum, I fail to see the point of his criticism. The kind of plums I referred to and mention by name, Guëii, Pond's Seedling, Glass Seedling and others of that class, as well as the Western forms, DeSoto, Weaver, Cheney, etc., bore and ripened the greatest crop on record in this district, not only in what your correspondent chooses to call my "sheltered cottage garden," which he never saw, but in such exposed situations as the Experimental farm here and many other similar places that I know of. I know of one Glass Seedling, off which the owner sold twelve pailfuls besides what they used. We think that a pretty good crop here.

He is quite correct in saying there was no cold weather in June in the Ottawa Valley. No one said there was. The blooming season of strawberries this year was from the fifteenth to the end of May, during that time we had continuous cool weather, which I thought was the cause of the very uneven fertilization which was so prevalent in this district.

I have always endeavored to have my reports as accurate as possible, never sending in one without consulting with several fruit growers and sometimes writing six or eight letters to growers in the Ottawa Valley, asking for information before making up my report, so that if they are so unreliable and erroneous as your correspondent thinks they are, I am not alone to blame.

R. B WHYTE.
Ottawa.

Wild Flowers and Women.

Salient characteristics of the American Institutes National Photograph, Flower and Fruit Show at the Academy of Design.

Wild flowers will form one of the most interesting, beautiful and important departments of the national exhibition of photographs, flowers and fruits, which will be opened Monday, September 26th, by the American Institute at the Academy of Design. Because of the general interest that women take in flowers, and because of the number of exhibits made in the show of amateur photographs by women, the coming novel exhibition will be peculiarly a woman's show.

The exhibition will be opened in the height of the Golden Rod season, and will be timely for other late maturing species of American flowers that are recognized by the many, and that are popular favorites. The veteran authority on horticulture, Dr. F. M. Hexamer, who is the most ardent and active of all his associates in the Board of Managers of the American Institute Fair in organizing the Flower Show, promises that the coming exhibition of native American flowers will be most valuable as a practical botanical lesson and a thing of great beauty as well.

Re Curled Leaf.

SIR,—Mr. J. M. Dickson, of Hamilton, writes, *re* curled leaf and mentions the use of wood ashes. It would be interesting to know how much per tree was applied, time of year exact, if possible, at which application was made, also if the trees owned by the two gentlemen were of the same variety of peach. The latter question seems to the writer a very important one in deciding whether the ashes were or were not a preventive of the curl. As in many orchards this year, as in general some kinds were almost free from curl, while others were completely covered with it.

W. C. ORR.
Winona.

"*Re* peach curl" party claims to have used wood ashes with success in former years on Crawford, Early Alexander and other varieties.

This season, Crawfords treated were unaffected, while Crawford, Elberta and unknown, not treated, were attacked. About one peck of hard wood ashes was applied in early spring, as soon as snow had gone, and dug into the soil at a later period.

I am not a practical fruit grower, and cannot say much about the matter. I might add that I am a practised consumer of peaches.

J. M. DICKSON.
Hamilton.

THE APPLE MARKETS.

Messrs. J. Keltrick & Co. write :

Official statistics are now published regarding the crop in the Home Districts, from which it appears that out of 331 reports, 150 are to the effect that the supply will be an average one.

42 .. .. .. over.
139 .. .. .. under.

so that it may be taken for granted that the result will be fairly satisfactory. As to the quality, we have no reason to believe the fruit will shew any improvement, consequently we repeat that English Apples will interfere very little with shipments from your side.

One indication of this is the fact that although English fruit is even now on the market, our imported Lisbon Apples are

making prices 35% to 50% better than what they made this time last year. Under these circumstances we think well of shipments of early fall fruit, especially Canadian, which as soon as they shew a little color combined with good size and clear skin, may be sent forward by fast steamers to Liverpool. As a rule these land in poor condition, but we think this is a season when a small quantity may be shipped with fair prospects of making a profit.

From the Continent our Dutch friends say their crop is small, while Germany will have a fair average. France so far promises well and these will, along with Kent and other English Southern Counties, give a good supply to the London Market until winter sets in.

CINCINNATI—Messrs. Armacost, Riley & Co., say on 7th September:

Canadian Duchess are selling at $2.50 per bbl.; Culverts, Gennettings and Alexanders, $2.25 to $2 75 per bbl.

Michigan is now through with summer apples, and fall varieties are not grown extensively in that state. New York state has a light crop, with none in the Central and Western states. We therefore expect even a better market than is ruling at the present time. Damson plums are very much desired in this market, and always command high prices. Sales were made to-day at $1.50 to $2 per bushel.

Last year we received a great many Canadian damsons, which were very fine and arrived in good condition under refrigeration.

CINCINNATI.—Since our last quotation apples have been in very light receipt, and as small fruits, especially peaches, are about exhausted, the demand has been very heavy and prices have ruled high. Maiden Blush and Alexanders, $3.50; Colverts and Jennettings, $3.00 to $3.25. Other good varieties, $2.75 to $3.00 per barrel. Michigan fall apples are entirely exhausted, and as the supply of this grade must now come from the New England States and Canada, there is no prospects of lower values soon. Damson plums scarce; selling at $2.00 per bush. Let consignments come forward, and will place same to best advantage.

HAMBURG, GERMANY.—Messrs. W. Dickwuth & Son write under date of 26th August:

"There are very good prospects for the sale of Canadian apples in our market this coming season, and should be very pleased if you would try our market with some shipments of good quality and good carrying apples.

We have a very large outlet, as Hamburg is the market for all Germany and Austria, and buyers come and attend to our sales from all round. For the last two years quite a market opened here for Canadian apples, these being so very superior to what we raise here. People are wanting for table use Canadian apples only, and the demand is increasing every year.

BELLEVILLE.—At a meeting of the Belleville Horticultural Society, held recently, the secretary reported that the manager of the Bay of Quinte Agricultural Society had notified him that their society had decided to hold no fall show. It was decided that it was too late to prepare for a successful flower show this year. The holding of a show at a date fixed so that the members would not have to wait the action of the agricultural society for 1899 was also decided on.

It was further decided to give, next year, special inducements to all members for the year 1899.

The Board also had under consideration the question of a prize to the best kept and best flower beds of the city schools, and will ask the school boards to co-operate in the matter.

The Fruit Growers' Journal says:—The West will depend on the East for its apples this year, unless all signs fail. That is a reversal of the conditions of 1897, yet it is the opinion of the fruit experts in many of the Western States. At the recent meeting of the Missouri Valley Horticultural Society, held at the home of G F. Espenlaub, near Rosedale, L. A. Goodman, in reporting on the condition of orchard fruit, said there was almost a failure of apples throughout the West, especially in Missouri, Arkansas, and Kansas, while Ohio, Michigan, New York and New England will have from 60 to 75 per cent. of a crop, and will be called upon to furnish the larger amount of the apples consumed here.

Messrs. Jas. Lindsay & Son, of Edinburgh, write:—

"As the apple season is now approaching, we take the liberty to address you *re* prospects. We have had information from various apple producing districts at home and on the Continent, and so far as our information goes we are of opinion that there will be a good outlet for fine clear skinned bold Canadian fruit. English crops are only medium, and very few will find their way into the Scotch markets. Productions nearer hand are not to be counted upon, they being too small, and only fit for manufacturing purposes. There is only one quality that competes with Canadians. They are the French Belles, a large beautiful which is both a good eater and admirably adapted for cooking purposes. However, we expect the bulk of them will be over previous to the arrivals of winter fruit from Canada. Hence, we do not anticipate any serious opposition from this quality. Therefore, we consider the outlook will be very good for fine bold selected fruit. We again hope to be favoured with your shipments, and we need scarcely say that we shall use our utmost endeavours to realize satisfactory prices. Growers who have not much experience in packing, and who wish to ship direct them-

selves, we herewith give them a few hints as to what we consider necessary in the way of packing. In the first place we may mention the fruit cannot be too tight pressed. This is a very important item. Be particular that you brand the fruit according to the quality, so that there may be no chance of a second class barrel being opened in a parcel of fine quality. Were buyers to notice the like of this it would spoil the sale of the whole parcel, so it is safer to have them branded a cross or two crosses less, or another brand altogether. Also be particular to have the apples correctly named. We also strongly advise you to put felt paper on top and bottom, as owing to the smoothness of the felt, the skin of the fruit is preserved, and when opened they look nice and shiny. They also keep longer, hence the prices are greatly enhanced on account of the paper packing. Our advice to you also is that you should ship as early as possible, as all the early shipments make the biggest prices. Also use A 1 barrels, heads, and bottoms. Also A 1 hoops, and A 1 liners, and quarter hoops. The quarter hoops ought to be nailed with ¾ inch nails and of a quality that will bend to clinch. These ought to be nailed and clinched previous to the apples being put in the barrel. By doing this the quarter hoops will not spring off, and the packages look much better when selling, and bring more money than when the hoops are wanting, which is often the case with badly coopered barrels.

LONDON, ENGLAND; Mr. John Fox writes: Confirming my letter of August 17th, I beg to report that the estimated crop of English apples at that date is now found to be considerably less. This is attributed to the cold weather experienced here during June last, and the present estimate is that it will not be even an average half crop, as there are daily heavy arrivals of fallens upon the markets, and the prospects are that few or none will bear winter storing. Under the circumstances I have no hesitation in stating that well packed and graded apples from your district will do well here during the ensuing season.

Our Book Table.

WHOLESALE TRADE LIST of New and Rare Seeds, Plants, Bulbs, etc., grown by Mrs. Theodosic B. Shepherd, Vandaluda by the Sea, California.

FRIDTJOF NANSEN AM NORDPOL, don Louis Viereck. The Herold Co-, Milwaukee.

CANADIAN HORTICULTURAL ASSOCIATION.—First Annual Convention at Toronto, 7th and 8th September, 1898. Official programme.

TRANSON BROS NURSERIES, Borbier & Co., successors, 16 Route d'Olivet, Orleans, France, wholesale fruit and ornamental trees.

ANNUAL REPORT OF THE FRUIT GROWERS ASSOCIATION of Nova Scotia, annual meeting at Wolfville, January 26, 27, 28, 1898

AGRICULTURE, BY C. C. JAMES, M.A., Deputy Minister of Agriculture for Ontario, former Professor of Chemistry in the O. A. C., Guelph; published by George N. Morang, Toronto, 1898. Price 25 cents.

We can heartily commend this book as a primary text book in agriculture. Indeed, we believe it will make possible, what has been so long thought desirable, the study of agriculture in our public and high schools. Previous text books have been entirely too technical and too narrow to be placed in the hands of the ordinary school boy; such books would tend to lessen his interest, because too advanced for him, but a book like this one will attract young people to the study of agriculture, and afterward into the practice of this honorable vocation. The book deals with the whole round of agriculture in a series of brief chapters, well illustrated, which serve as a grand introduction to further studies. Seven chapters are given to *The Plant*, three to *The Soil*, nine to *The Crops of the Field*, six to the *Garden, Orchard and Vineyard*, ten to *Live Stock and Dairying*, a chapter each to *Bees, Birds, Forestry, Roads*, and *The Rural Home*, and an appendix giving lists of trees, weeds and spraying mixtures.

How a nicely bound book, of two hundred pages, like this one, be can sold for 25 cents, is a puzzle. We commend it to every reader.

LIFE ZONES AND CROP ZONES OF THE UNITED STATES, by C. Hart Merrian, Chief Biological Survey, Washington, 1898.

The ideal of this publication by the U. S. Dept. Agriculture is an excellent one, viz., to show the different life zones of the North American Continent, and the fruits which succeed in each. We can, of course, hardly expect justice would be done to Canada in this work, for even for us, the area of successful cultivation of different varieties is quite unsettled; yet the following sentence covering the Canadian zone is hardly to be accepted.

"In favored spots, particularly along the Southern border, white potatoes, turnips, beets, and more hardy Russian appies and cereals, may be cultivated with moderate success."

Again in the list of grapes, which succeed in the Transition zone, which takes a large part of Canada, we notice many varieties of grapes ruled out which certainly succeed, *e.g.*, Brighton, Delaware, Iona, Lindley, Salem, etc.

Speaking of peaches, he says, "the Hale is the only peach known to thrive in the Transition zone." While as a matter of fact we know a good many varieties succeed even as far north as the Beaver Valley.

We must do Mr. Merrian the justice, however, of noting that he includes the Niagara and the Essex districts in the Upper Austral zone, which also embraces the state of Ohio.

BOSC, *Photographed and engraved from a sample grown in 1898.*

THE
CANADIAN HORTICULTURIST.

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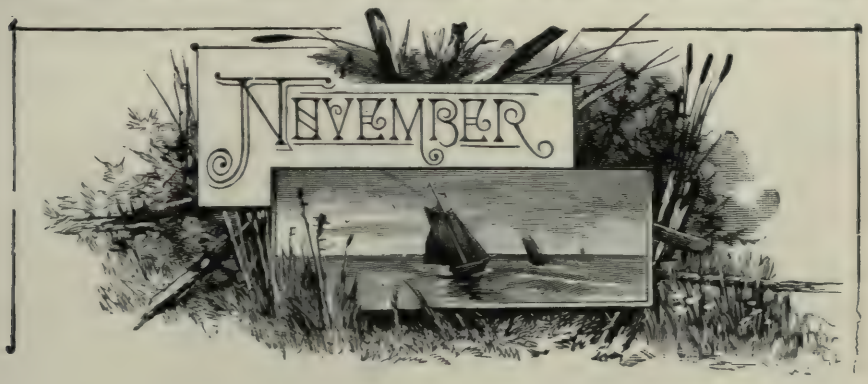


THE BOSC.

(BEURRE BOSC *Downing*).

NOW that the export trade in Canadian pears bids fair to prove remunerative, it is most important that our fruit growers consider seriously what varieties best suit the British market, and what are best adapted to such long distance shipments. We are much disappointed that our peaches and our grapes have not met with more encouragement in the English market; but it is some satisfaction to know that our finer varieties of pears, such as Bartlett, Anjou, Howell, Louise, Clairgeau, Bosc, and even Kieffer command a fair price in England. A few years ago, when our home markets gave us 75c. to $1 per basket for these pears, there was no object in exporting them, but now that pears only bring 25c. to 45c. in our markets, our only hope for profitable fruit culture is in its export. To do this we must plant or top graft the best varieties as soon as we have experience enough to know which they are.

The Bosc pear is not as widely known among cultivators in Canada as its merits deserve. Though a russet, it yellows as it ripens; the pear is large in size, and uniform on the tree as if thinned purposely; and the texture is such that it can be exported in fine condition. In quality, a well grown Bosc is first-class. On the whole, we would place this pear among the valuable kinds for planting for export to the foreign markets.

Origin.—A chance seedling found in France, and dedicated to M. Bosc, the eminent director of the Jardin des Plantes at Paris, about the year 1835.

Tree.—A vigorous grower, and a regular bearer, carrying its fruit singly and not in clusters as is the habit of some varieties.

Fruit.—Large, 4 inches long by 3

inches broad, elongated acute pyriform, covered with slight indentations, color, greenish yellow ground nearly covered with cinnamon russet; stalk, 1½ to 2 inches long, stout and usually curved, inserted without a cavity; calyx open in a shallow basin.

Flesh.—White; texture, fine, breaking, juicy; flavor, sweet, rich, delicious.

Season.—October.

Quality.—1st class for dessert.

Value.—1st class for either home or foreign markets.

Adaptation.—Southern Ontario.

THE ASPARAGUS BED.

FOLLOWING is part of the summary of a recent Missouri bulletin on asparagus growing: For the asparagus bed the soil should be pulverized thoroughly to a good depth, and plants set twelve to eighteen inches apart in straight rows four feet apart. Vary the depth of setting the plants in the ground from four inches at one end of the bed to eight inches at the other; the shallow set plants will come up earlier in the spring, thus giving a longer producing season. Give clean cultivation during the summer, and in the early winter mulch heavily with old fine manure. In early spring ridge up the rows by turning the soil between the rows over the sprouting plants. The sprouts coming through this depth of soil will be long, well bleached and tender. This ridging also facilitates subsequent cultivation, as after the asparagus is cut these ridges may be raked or lightly harrowed to kill weeds without injuring the crowns below.

No asparagus should be cut until the plants are two or three years old, but after they have become thoroughly established, cutting may continue daily for six or eight weeks in the spring. Allow no stem to make leaves until cutting ceases about the first of June. After that time the best cultivation should be given until autumn. Under no circumstances should the tops be cut after harvesting ceases until they have died in the fall. This summer growth makes the plants strong and ready for the next spring's crop. A bed treated in this way every year should produce well for forty years.

FAULTS OF THE ELBERTA PEACH.

THERE appears to be one drawback to our growing the Elberta in the north, and that is its tendency to curl leaf. Everywhere in Ontario this year we hear the same complaint, that it is more subject to this fungus than any other variety. We hope further test may be more favorable to a variety that has received such high commendations.

Even Mr. Glen, who has been championing this peach as it appears in the New York market, coming from the Southern States, writes under a recent date.

"During the last few days I have purchased some beautiful specimens which have been tasteless. They may have been grown upon young trees with redundant foliage and therefore of poor quality, and it may be that it will not prove to be a peach of best quality in a Northern climate. All those I have eaten from the South were as good as they were beautiful."

FIG. 1454—A. ALEXANDER, F.S.SC., LONDON, ENG., *President of the Hamilton Horticultural Society.*

SKETCH OF THE LIFE OF MR. A. ALEXANDER.

R. A. ALEXANDER, President of Hamilton Horticultural Society, was born at Errol in the Valley of the Tay (Carse O' Gowrie), Perthshire, Scotland, where his boyhood was spent amid beautiful surroundings. He has inherited his love of flowers from his mother, of whom his earliest recollection is of watching her attending to her garden in which she had all the old favourites, auriculas, polyanthus, sweet williams, and a rockery containing many varieties of saxifrages and other Alpine plants; his first task being that of assisting her in keeping the weeds down.

His first venture in floriculture was made when about ten years of age. Some person had said that Primroses planted in soot would produce purple flowers, so he hied him to a neighboring plantation, and dug about fifty plants from the stiff clay bank of a little stream, transporting his treasures in his new clean pinafore, a proceeding which did not meet with maternal approval when discovered.

The plants were set on the north side of a hawthorn hedge, where they throve amazingly, being treated to occasional doses of soot surreptitiously scraped from the kitchen chimney.

The opening of the first buds was anxiously watched for, and great were the expectations, but alas, the longed for purple did not materialize, the yellow primroses were yellow still, but the bloom was abundant, lasting through April and June, and was so much improved by cultivation as to attract public attention, church goers pausing on their quiet Sabbath journey to admire the display.

The partial success quickened the youthful interest, and the patch was filled out in the following spring, the result being that the young enthusiast could soon have supplied the whole of his county with seed, if such had been required Fifty years later, on revisiting the place of his birth, he found these primroses or their descendants, growing luxuriantly in the same spot, although the old garden had long since passed into the hands of strangers. Mr. Alexander received his early education in the parish school, and intended to study for the ministry, but when about to enter St. Andrew's University, his health failed and the family doctor ordered out-door employment. Civil engineering was suggested, but his desire was for horticulture, so he was apprenticed in the gardens of Lady Allen, near his home, where he remained three years, thence going to England to widen his knowledge. Here he was fortunate in obtaining good positions having charge of the Marquis of Northampton's conservatories and orchid houses for some time. His health having in the meantime become thoroughly restored, he entered Homerton College, London, remaining at that institution until he had graduated, when he removed to Yorkshire, where he dwelt for fourteen years, teaching school, but always dabbling in botany, collecting specimens, etc., never failing to have a flower garden, in fact being sometimes charged with monopolizing ground that might be much more profitably utilized in producing vegetables for family use.

In 1871 Mr. Alexander brought his family to Canada, intending to settle in Muskoka, where he had heard land was plentiful, offering strong inducements for farming and gardening.

He journeyed beyond Bracebridge, a

night's ride through a burning forest being the most striking feature of the trip, but found the country too rocky and the hardships of the pioneers too great for one not accustomed to rough-

positions until the final disbandment. When the present Society was organized, Mr. Alexander was unanimously elected President. He has been President of the Hamilton Scientific Associa-

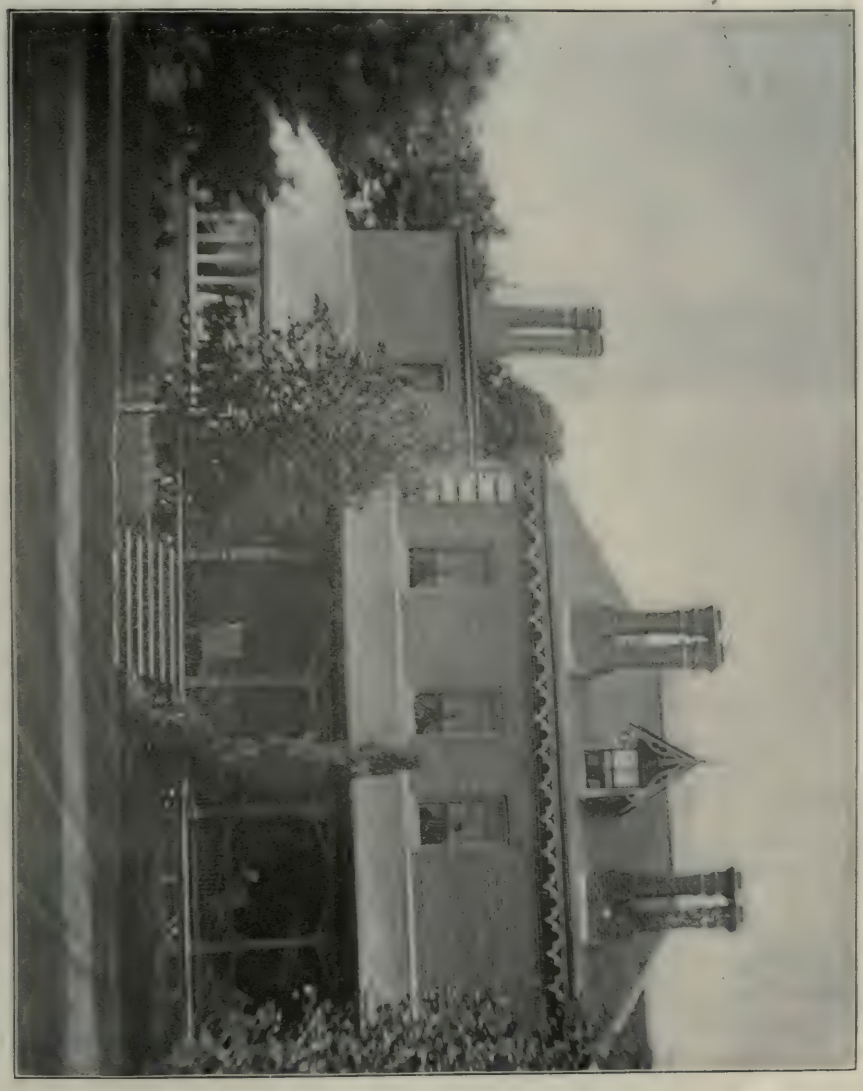


FIG. 1455.—SIDE VIEW OF MR. A. ALEXANDER'S HOUSE AND GREENHOUSE, HAMILTON.

ing it. Mr. A. then removed to Hamilton, securing a position on the "Spectator" staff which he filled until entering the civil service in 1884.

He joined the old Horticultural Society in 1875, filling various official

tion for several terms, and in conjunction with Dr. Burgess, F. R. S. C., now of Montreal, founded last year, the Herbarium in its Museum. A catalogue of the plants now in this collection was issued by Mr. Dickson, Secretary of the Horti-

FIG. 1456.—GORE PARK, HAMILTON, showing bed of tulips in spring.

cultural Society and Mr. Alexander. His residence and grounds at the corner of Wentworth and Stinson Streets are well known to all members of the Society, interested callers always being welcome to inspect the conservatory and lawn, and also to share in the products thereof. Hardy perennials are largely grown, although showy annuals are not neglected, and choice natives such as anemones, bloodroots, phloxes, trilliums, cypripediums, hypericums, aquilegias, monardas etc., form no inconspicuous portion of the display, illustrating what intelligent cultivation can do with our common wild flowers. J. M. D.

A GOOD QUINCE FOR MARKET.

THERE are but few fruits that are as easily and quickly grown as the quince, or one that requires as little labor in harvesting. The Orange quince is too well known to need any comment, but for me I prefer Meech's Prolific. It has awakened not a little interest among fruit growers in general. It is a vigorous grower, an early and prolific bearer, and bears regularly, and I have known it to bear when but two years old. It is a fine combination of beauty of form, flavor, color and size. It is pear shape, and of a bright golden color. As a cooking variety I believe it to be unequaled, as its flesh is very tender, fragrant and free from hard lumps, which makes it excellent for marmalades and jellies.

Its beauty of form, together with its tendency to hold its leaves until late autumn, renders the tree very attractive, and the rich golden color of the tree in bearing reminds me of an orange orchard.

I believe it to be the best quince grown for market and home use, and I would advise all who set out quinces, to try one or more of Meech's Prolific. by all means. I do not think you will be disappointed.—Herbert Johnson.

DIGITALIS PURPUREA. *(Foxglove.)*

"An empty sky—a world of heather
Purple of Foxglove—yellow of broom."
--Jean Inglow.

THUS the gifted poetess quaintly but truthfully paints the moorlands in many parts of the Motherland—No tree to brink the sky-line—the beautiful heather everywhere, only broken here and there, by patches of the yellow broom. It is there that the stately Foxglove, the subject of this brief sketch, is found and seen to advantage, standing as upright as a sentry on guard, in gorgeous uniform, perhaps in the shelter of a broom or gorse bush or surrounding some huge granite boulder, sometimes gently swaying in the sweet breezes wafted over the heath, vocal with the hum of bees, and laden with the fragrance of the moorland flowers. It was in the shadow of a large rock not far from Dunsinane Hill, where Macbeth's castle of historic fame stood, that I made my first acquaintance with the foxglove. Years afterwards I found the descendants of the same sentries keeping watch over the same rock, reminding one of the customs of times gone by, when certain

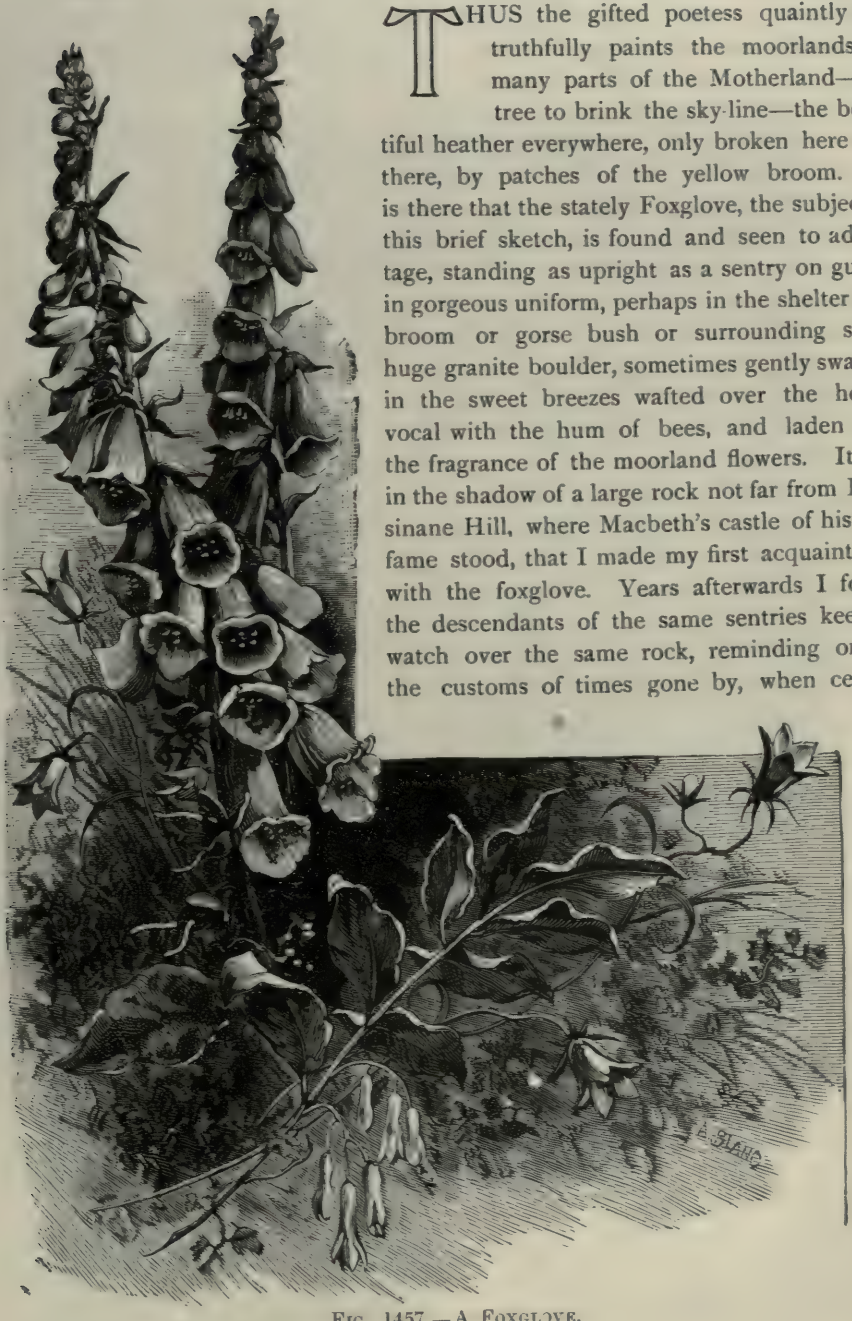


FIG 1457.—A FOXGLOVE.

posts of honor were hereditary in one family, and handed down from father to son. It is not only on the heaths and moorlands that this most stately and beautiful of herbaceous plants is found, but in Scotland and some parts of England many a hillside, and dry sandy bank, or moorland margin, is made gay with the large purple flowers of the Digitalis. It belongs botanically to the order Scrophulariaceæ. In Britain, its native country, it grows to the height of from 2 to 4 feet perfectly upright, bearing from 50 to 100 beautiful purple (rarely white) companulate flowers marked inside with eye-like spots. The flowers are in shape like the finger of a glove, hence the name, and hang on one side of the stem. It is found distributed very widely in Britain from Lands End to the Orkney Islands and also in Western and Central Europe where there are found also two other species; D. lutea and D. grandiflora.

FIG. 1458.—DIGITALIS PURPUREA *(Foxglove)*.
As growing in the garden, Wentworth S., June, 1897, from self-sown seed.

The digitalis had from early times a great reputation as a medical plant, being applied externally to ulcers and scrofulous tumors, and taken internally

for diseases of the heart and for dropsy. For these purposes the leaves are used, being gathered when the plant is in bloom. It thrives best in a gravelly or sandy soil. The common name is from the Anglo-Saxon *foxes-clife* or *foxes glove*. It is known by a great variety of

The German name of thimble suggested to the botanist Fuchs in 1542 the Latin adjective *digitalis* as a designation for the plant, which it has retained ever since. The earliest known description of the plant is that by the botanist just named, about the middle

FIG. 1459.—THE FOXGLOVE.

names in Britain. In the south of Scotland it is called *bloody fingers*, farther north, *deadmen's bells*, and on the eastern borders *ladies thimbles*, *wild mercury* and *Scotch mercury*. In Wales the synonyms are *elve's gloves*, *foxes-gloves*, *red fingers* and *dogs fingers*.

of the 16th Century, though it is certain that it was known to herbalists at a much remoter period, for it is mentioned in two distinct MSS. written before the Norman Conquest.

However, I must remember that my purpose in writing this article was not

so much to give the history of the foxglove as to call attention to its usefulness in the herbaceous border of our grounds, or as a foreground of a shrubbery or margin of a lawn. It will thrive in odd corners. Its own dignified bearing when in flower seems to be communicated to all around it. I have grown it for many years in great abundance and in great luxuriance, for it seems to like the sandy soil of my garden. It comes up everywhere. Fig. No. 1458 will give some idea of how they grow when *self-sown*. This is from a photograph of *part* of a pacth of fox-gloves which came up where some old seed stems had been thrown down. In a wild state in their native land we seldom find more than two or three flower stems to one plant, but as I grow them I have sometimes as many as 18 or 20, each with from 100 to 125 flowers on each. Fig. No. 1460 taken from three plants planted 6 feet apart to break the flatness in a bed of tulips, the one in the foreground had 15 spikes of bloom. Some of the spikes shown at Mr. Woolverton's house in June last were cut from this plant. I find that a cedar or spruce hedge forms a fine background to show them to good advantage. They seem to like a partial shade, at least, so as to be spared the glare of the midday sun in this climate. They require no care and no protection in the winter with me. I can see the seedlings by the tens of thousands now in my garden coming up round the old plants. Through the agency of the bees I have every conceivable shade of color from the purest white up to crimson-purple. Seed sown late in the fall or very early in the spring will flower the following summer in June and July. The seed is very fine and evidently needs no covering but a little shade. The seed is produced in great quantities. I made a calculation about a year ago of how many seeds one plant of digitalis produced by counting the seeds in one capsule or seed vessel. I found it contained 250, a second one 310 seeds. Taking the average number of capsule on each flower stem of fifteen to be 100 there would be at least 375,000 seeds produced by one plant, a wonderful illustration of the generous provision made by nature for the propagation and continuance of her "earth-born blossoms." Fig. 1459 is from a photograph of a few spikes of a Foxglove at close range.

FIG. 1460.—Three plants of Foxglove planted in long bed of bulbs, 100 feet long, containing 1000 tulips.

All I need add to this already too lengthy and discursive article, is, to say, that in moving the plants from one place to another, say from the seed patch, as much earth as possible should be retained about the roots.

I trust that as a result of the bringing of this plant to the notice of the readers of the HORTICULTURIST, many of them will be induced to give a place in their flower gardens and shrubberies to *Digitalis purpurea*.

A. ALEXANDER.

Hamilton, Ont.

PACKING TENDER FRUITS FOR EXPORT.

AT last we believe it is being proved that we can reach the world's best markets with some kinds of our tender fruits, and get even with California, or any other country in our operations.

The prices obtained in Covent Garden for choice Astrachan, Duchess and Alexander apples, viz., about $1.25 for a case containing scarcely a half bushel of fruit, shows how our fine fruit is going to capture the British market. This was no extraordinary shipment. Anyone in Canada was open to have done the same thing, and perhaps many have done so, and have kept the secret for fear others would try it; ours was a private shipment, but since the writer is also contributing to the Government's shipments, we will contribute all the information we can to the general good.

Now, because we have succeeded with the apples above mentioned, let no one run away with the idea that indiscriminate shipments of early apples would pay. There are too many risks in such an undertaking for the careless man to succeed; but the possibility is before us, and the wise man will cautiously try, by the most careful handling, packing and shipping, to attain success.

The fact is, we have over-stocked our Canadian markets with all kinds of fruit, and we must reach out, or enter upon some other industry; and we appreciate the efforts being made by the Department at Ottawa to open the way for successful export in cold storage.

The important thing now before us is to follow a uniform style of package and packing. Fortunately, we have hit upon the best package in the world, which every exporter of tender fruits should adopt, viz., the one shown on page 303. This case is 22 inches long, 12¼ inches wide, and varies in depth to suit the fruit to be packed. Thus, for pears or apples 3 inches in diameter, we use a case 6 inches deep, to take 60 apples, *i.e.*, 5 layers, two deep and 6 apples long; for fruit 2½ inches in diameter, a case 5 inches deep, to take 80 apples or pears; and for fruit 2¼ inches in diameter, a case 4½ inches deep, to take 100 apples. If the fruit is properly sized before wrapping and packing, it is evident that just a certain number, neither more nor less, can be put in a case, and the number should be stamped on the outside end, so that the buyer can tell exactly what sized apple he is selling. To grade for size to suit this special trade in apples and pears, a grader is necessary, because one can never judge entirely by the eye. Our friend, Mr. E. H. Wartman, of Kingston, deserves the credit of being the first to invent a grader for apples which can be made at a reasonable price, compared with the expensive graders used in California for oranges.

By means of this the fruit can be sized to fit each case, and is then ready for wrapping. We have been using thin Manilla tissue, ten inches square for apples and pears, and 8 x 8 inches for plums and peaches. This can be purchased wholesale at about 18 cents a thousand squares.

It is also important to stamp the grade on each box. We use two grades of our choice fruit, viz., A No. 1 and No. 1; with occasionally a case of very large and very fine samples, which we labelled Extra A No. 1.

It would manifestly be absurd to put up in these small packages anything of an ordinary grade; for such a course would make a failure of the business by

simply multiplying packages and not creating any increase in the demand. The special package must mean a superior class of product, and then it will command a ready sale among a certain class of buyers. Ordinary fruit should be put up in barrels as usual, and so it will not come in competition with our higher grades.

During the past season, 6 car-loads of this superior class of apples, pears, tomatoes, peaches, and plums have been forwarded to the British markets, and for the most part have done well, but full account sales are not yet to hand.

It is evident that English fruit growers are somewhat troubled about the prospect of our invading their markets with our tender fruits, if we may judge from the following extract from the Fruit Grower, published in London, England :—

With further reference to the Canadian fruits, we find that shipments are to be sent to Liverpool, Manchester, Glasgow and Bristol. The fruit will come over in cold storage. There can be no doubt that if these various attempts to flood our markets with soft, fresh fruits from several centres are successfully carried out, that the home grower will have a serious state of things to face. Though it may not be brought about very quickly, there is always the possibility of its being done when once the possibility of the scheme has been demonstrated. For instance, there are as we write some enormously sized eating pears on our markets from California. They are better than any French ones ever seen here, and beautifully coloured. They are as large as our largest Pitmaston Duchess, and though we can raise plenty of this kind of pear as large as any produced by the outside grower, it is clear if we are to more than hold our ground that we must raise dessert pears of fine appearance and of large size.

CHESTNUTS FOR PROFIT.

CURIOUSLY enough the fruit growers of Ontario, like a flock of sheep, are given to follow in whatever line any one takes the lead. If one man plants Burbank plums, or Kieffer pears, and gets a paying crop, forthwith you see every fruit grower planting Burbank plums or Kieffer pears. A short time ago the Niagara grape was the thing, and every one planted it until now it is becoming a drug in the market. Why would it not be wiser for each man to show an independent spirit, and plant out such a selection of fruits as his own judgment shows him will command a market, and such as he himself has the skill to cultivate with success.

Neither do we approve of the inconstant ways of some growers, who are continually changing from one thing to another. One year sees them digging out their apple orchards because for one or two seasons the markets were overstocked, and another year planting them because better prices were received.

As a sensible variation from fruit growing we are glad to notice that attempts are being made to make nut culture a profitable department for the horticulturist. Much has already been written about the walnut, and especially that hardy and productive variety, Juglans Sieboldiana. Now we note with interest a recent article by Mr. H. E. Van Deman, of Virginia, on the cultivation of the Chestnut for profit. This nut may not be hardy enough to succeed far north, but across southern Ontario there are old chestnut ridges where the native American sweet variety flourishes even to a good old age, and on such high, sandy knolls, we hope to prove that the more productive and profitable varieties may be grown with success. Mr. Van Deman writes as follows in the American Agriculturist :—

"Of all the varieties of the chestnut,

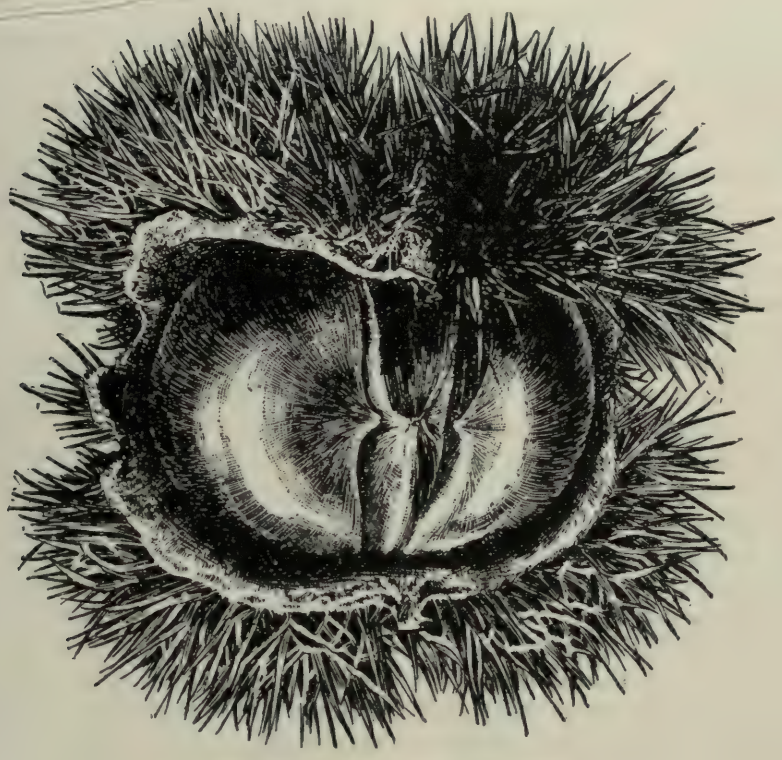


FIG. 1461.—THE KILLEN CHESTNUT.

either European, Asiatic or American, the Killen is the largest I have seen, and I do not believe there is any other as large in this country. The Giant, which is of Japanese origin, is the nearest to it, and some of the Parry seedlings are almost as large.

"The Killen is a seedling of the Japanese species, *Castanea Japonica*, and originated from a nut planted within the last 10 years by J. W. Killen of Delaware. The tree began to bear very early, and it was a remarkable sight to see the large burrs on so small a tree. The first time I saw it was in 1893; it was then bearing several burrs and not so high as my head. Mr. Killen began to graft the scions in other trees and found that they bore the next year after being set. This precocity and abundant fruitfulness seems to be typical of the variety, judging by all the young trees and grafts as well as by the old tree.

"The nuts are very large, as may be seen by the accompanying life-size illustration. Last fall I weighed three nuts from one burr which aggregated 3¼ ozs. and another nut from a burr which had two in it turned the scales at 1¼ ounces and measured almost six inches in circumference. There are rarely less than three nuts to the burr, and the above sizes are not uncommon, and single nuts, when they do occur, are even larger. In quality the Killen chestnut is not equal to our native wild chestnuts, nor are any of the varieties of the foreign types, so far as I have tested them. But it is better than the average of either the European or Japanese kinds.

"In habit the tree is not so robust as some of the Japanese varieties, but it is

not feeble or so dwarfish as some of them. It makes a very satisfactory orchard tree and grafts well on our native stocks, but does best on seedlings of the Japanese species.

"The culture of the chestnut is getting to be an industry of considerable importance in America, as well it might be; but our people seem surprisingly slow to take it up. There are millions of acres of suitable chestnut land in this country, and much of it that is peculiarly adapted to its culture. Sandstone, shale or sandy, well-drained soil is the best. Limestone land does not seem to suit the wild chestnut trees, for they are seldom found on it. The hills and mountains from Massachusetts to Georgia are the home of our great wild chestnut forests. There are vast areas in Pennsylvania, both the Virginias, and the Carolinas in particular, which have been chopped over that would make ideal chestnut groves if worked over with the improved kinds, such as Paragon, Ridgely, Numbo, Killen and some others. But it has been done already to a considerable degree in Pennsylvania and New Jersey, and with only tolerable success. The burrs do not seem to be as well filled on these grafted sprouts as on trees grown in the nursery set out in orchard form. Cultivation, perhaps, has something to do with this, and insects also for the chestnut weevil is the bane of the business. And it is hard to combat, for the eggs is laid in the growing nut by a very long-snouted curculio, and spraying seems futile. Jarring may be a feasible plan, but it has not been demonstrated as yet.

"Gathering the nuts is another point of importance. In rough, stumpy, rocky and trashy land this would be a considerable task, if the nuts had to be picked from the ground every few days. Perhaps sheep would keep down the undergrowth and help to clear the ground somewhat. Picking the burrs before the nuts were quite ready to fall out would do while the trees were small, but this would only be possible for a short time. But in smooth, clean ground that was kept clean of weeds and brush, the gathering would be much easier. The best stocks for the varieties of the European chestnut are seedlings of the same species, and the best for the Japanese kinds are seedlings of the same type. When grafted on our wild or native stocks the union is not always good."

TYDÆA HYBRIDA.

TYDÆA are Gesneraceous plants bearing most beautiful, spotted flowers in shape not unlike a Gloxinia. The scaly tubers resemble a large white "grub worm" in general appearance. The bulbs should be potted in the spring in light, rich, porous soil, watered sparingly till growth begins, then more freely, and given good light and partial shade from direct sunlight. Avoid wetting the foliage during damp weather, and also while the sun is shining brightly upon it. After blooming in autumn gradually withhold water, and when the soil is dry set the pots away in a dry room where the temperature is from 50° to 55°. The plants are easily grown and deserve a place in every window garden. Plants may be propagated from the seeds. They are very small and require the same treatment as seeds of Gloxinia or Tuberous Begonias.

CULTURAL DIRECTIONS FOR GINSENG.

THERE is no doubt but that Ginseng *(Aralia quinquefolia)* can be successfully grown. At present, Ginseng commands a cash price in the open market of from $2.50 per pound for poor, to $4.00 for the best quality, and there is apparently an unlimited demand for it at these figures. That the supply, which has been in the past entirely sustained by native collectors throughout the region where Ginseng is indigenous, is inadequate to the demand, is plainly shown by the steady increase in price from year to year, and sections of country where it was abundant but a few years ago are almost entirely depleted. Eventually it must become a cultivated crop, but the fact that it takes from four to six years' growth before it is ready for the market will always militate against its general cultivation, as will also the fact that it takes special conditions of soil and treatment to make its growing a success. This makes returns more certain for those who devote care and attention to its cultivation.

It must have a rich, cool, loamy loose soil, always preferring shade, and should have a heavy mulching of wood leaves in autumn, which are to be left on during the next summer to decay and conserve moisture. It will thrive in almost any rich garden soil, if given shade and moisture and constant cultivation.

Cultivated Ginseng, properly cured, is always classed finest grade, which means large smooth, clean and sun-dried roots, and should an acre produce but a thousand pounds in five years, the profits would be very large, and it would not be unreasonable to expect double this yield. For those who intend planting on a large scale, the following suggestions will aid in making a proper start.

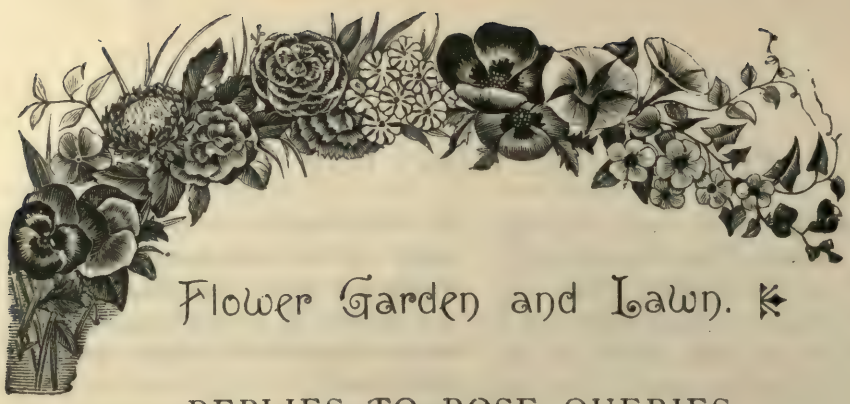
First, where possible, select a cool, moist piece of ground, preferably where there is natural loam, or where the ground is loose and rich. Well rotted stable manure is good for bringing up garden soil to a proper condition, as is leaf-mould, rotted sods, etc. Sandy soil, if rich and moist, is not objectionable, but rather desirable.

Plant in rows 8 inches apart, 4 inches apart in the row, leaving an alley 2 feet wide every sixth row, thus making beds nearly 8 feet wide, each with 6 long rows to the bed. Over these beds you can erect artificial shade by making lath covers with 4 foot laths, 1 inch apart, on frames 8 feet long and 4 feet wide, made out of 2 inch strips, 1¼ inch thick; then put in posts along each side of the beds—5 feet high—to which nail 2 inch strips to support the lath frame. These frames will last for many years, and can be taken in in winter. If natural shade is provided under trees, frames of course are not needed; but it will always pay to have some shade that will keep the ground moist.

Cultivation under the frames can thus be prosecuted without disturbing the shade. Keep the plants free of weeds, and cultivate the same as for any garden crop, and success should result.

H. P. KELSEY.

Boston, Mass.



Flower Garden and Lawn.

REPLIES TO ROSE QUERIES.

Ever-blooming Hardy Rose.

Reply by T. H. Race, Mitchell.

In reply to inquiries about roses on page 331, except in the mind of the nursery agent and the story he oftentimes so persuasively tells, there is no such thing as a really ever-blooming outdoor rose. After an experience of years in testing nearly everything that has been offered to the public, I have arrived at the conclusion that the Gen. Jacqueminot when properly treated will give more "after-bloom" and continue it up to a later season than any other so-called ever-bloomer grown in this latitude. Next to the Jacque comes the Coquette des Blanches, in ever-blooming qualities, offering a strong contrast in colors, and there are a few among the pink shades which under good treatment will bloom more or less throughout the season. The semi-hardy varieties, such as La France, Meteor, Ulrich Brunner, etc., should do as well at Mount Forest as here, for they need winter protection anywhere, but they do not pay, and will not at least give as much after-bloom as the two varieties I have named.

To answer the questions of "amateur gardener" would require an essay on roses. What I have already said may be taken as an answer to questions 2 and 5. If you have room for an essay I could answer all the rest for this climate at a future time.

Reply by Webster Bros.

Your correspondent has not succeeded in getting the La France into proper shape we fear, for a constant blooming hardy rose there is nothing better in existence than the La France and its varieties. The La France is rarely ever out of flower with us; even as late as October first, opening buds and flowers are to be seen in profusion. It would hardly repay the trouble to winter the ever-blooming roses outside in the vicinity of Mt. Forest. It would be better to lift the plants after a few frosts and winter them carefully in a suitable cellar or good cold frame.

Best Varieties.

Answers to Budget of Questions, p. 331, by Webster Bros., Hamilton.

1. The best 20 hardy roses, La France, Gustave Piganeau, Paul Neyron, Augustine Cuinnoiseau, Margaret Dickson, Baroness Rothschild, Merveille de Lyon, John Hopper, Mrs. John Laing, Magna Charta, Mme. G. Luizet, Capt. Christy, Maurice Bernardin, Pierre Notting, Marchioness of Dufferin, Alfred Colomb, Baron de Bonstetten, Earl of Dufferin, Ulrich Brunner, Prince Camille de Rohan.

2. The 12 best hardy roses, Autumn bloomers. Mme. C. Wood, La France, Augustine Guinnoiseau, Louis Van Houtte, Comptesse de Serennye, Abel Grand, Alfred Colomb, Francoise Michelon, Mdlle. A. Wood, Hippolyte Jamain, La Reine, John Hopper.

3 The 12 best dark colored hardy roses. Prince Camille de Rohan, Gus-

tave Piganeau, Pierre Notting, Louis Van Houtte, Baron de Bonstetten, Xavier Olibo, Grand Mogul, Star of Waltham, Alfred Colomb, Jean Liabaud, Abel Carrier, Earl of Dufferin.

4. The 12 best hardy roses highly perfumed. Alfred Colomb, Xavier Olibo, La France, Gustave Piganeau, Margaret Dickson, Earl of Dufferin, Mdlle. A. Wood, Augustine Guinnoiseau, Mme. G. Luizet, Duchess of Albany, American Beauty, Gen Jacqueminot.

5. The best Hybrid Teas worthy of garden culture (with slight protection). Cheshunt Hybrid, La France, Augustine Guinnoiseau, Duchess of Albany, Duchess of Leeds, Augustine Halem, Capt. Christy, Mme. Caroline Testout, La France de '89, Mme. Pornet Ducher, Kaiserin Augusta Victoria.

6. The best hardy climbing roses. Crimson Rambler, Empress of China, and the Prairie roses; the White and Yellow Ramblers might be included; they are not as worthy as the Crimson variety however.

7. The best half-hardy climbers with perfume. Climbing La France, Mary Washington, Climbing Meteor, Gloire de Dijon.

8. The best Hybrids of Rosa Rugosa. We have grown none of these except Mme. Georges Bruant, this is a very satisfactory and hardy sort, having long pure white buds resembling Niphetos in shape. Mrs Anthony Waterer is a new deep red semi-double flower highly recommended. Agnes Emily Carmen is a deep crimson colored variety, and the best of the batch of Hybrids raised by E. S. Carmen of the Rural New Yorker.

9. Hardy Carnations. We have had no experience with the European hardy varieties of the Carnations.

10. The best three Clematis for veranda. Jackmanii, Henryi and Kermesina Splendens, for a large veranda the small flowered variety Paniculata, is quite unexcelled.

NOTE.—As a rule not much gain in flowering is noticed in plants of equal size whether budded or on own roots. This pertains to garden culture, from a number of budded plants of the La France and Augustine Guinnoiseau, (White La France), we have had finer and more satisfactory supply of flowers this summer than we have ever noticed before, whether this is the result of being budded has not yet been decided.

WINTER ROSES IN POTS.

WOULD you enjoy a few roses in the house during the winter? No doubt you would, but unless you have a very sunny window to devote to them, in a room where you can regulate the heat so as to have the temperature at about 50 degrees during the night and 75 during the day, grow something else.

But, given the sunny window with the right heat, a few roses will thrive as well as geraniums, but not with the neglect that geraniums will bear. Purchase the plants in the spring, preferably two-year-olds, because of their size. The yearling plants are as thrifty as the older ones, and will be as good eventually, but of course the larger plants will give more bloom at once. Have rich soil, and four-inch pots for the yearling plants, and six-inch pots for the two-year-olds. Unglazed pots are better than the glazed. Put a piece of broken flower-pot over the drainage hole, and a handful of pebbles, or something for drainage, on top of which place a few

spoonfuls of dry, pulverized hen manure. Fill the pot nearly full of soil composed of good garden loam, mixed with about one fourth its bulk of old stable manure, preferably from a stable where cows are kept. Place the plants in the pots with the roots spread out, cover with soil, and press the whole down firmly, adding soil and firming down, particularly around the stems, until the pot is full. Water and keep in a cool, shady place for a few days. Then select some sheltered spot in the garden, and plunge the pots a few inches below the surface. After they are well established, keep the soil above the pots lightly stirred, and water sparingly throughout the summer, not neglecting to frequently sprinkle the foliage.

Keep a sharp lookout for insects, and if hand-picking, and sprinkling with clear water will not keep them off, try some insecticide. A spoonful of powdered white hellebore stirred into a pail of water, and applied to both the upper and under sides of the foliage, will usually do the business. An ordinary whisk broom, if you do not have a crooked-neck sprinkler, will enable you to spray the under side of the leaves. This is really the most important part to reach, as there is where the bugs and worms congregate. Watch closely for buds, and keep them all picked off. On the approach of frosty nights, lift the pots and remove as much of the soil from them as possible without disturbing the roots, and replace with very rich soil. Give the outsides of the pots a thorough scrubbing, not a mere washing, but a scrubbing with a brush. Take the plants to a warm, sunny room, water freely, and look for blossoms. As soon as each bloom shows any sign of fading, cut it off with all the stalk on which it grew, excepting two or three eyes. This pruning will encourage new growth, and that means more blossoms. After the plants are done blooming, cut them back from one to two-thirds, and put them in a cool cellar to rest for a few months. When it again becomes warm enough to plant the roses out, they can be transplanted to larger pots, and again plunged in the garden, where they will thrive and store up vitality for another winter's flowering.

While your roses are growing in the house you will have to fight the red spider, and your best weapon is clear water. Keep, if possible, a dish of water on the stove or radiator, and every day fill bowls with boiling water and set near your roses. Every other day spray both lower and upper sides of the foliage with tepid water. A quart of water used as a preventive is worth gallons of the same remedy used as a cure.

The following list of roses, with a short description of each, makes a good collection for the window: Enchantress—creamy white, with buff tinted centre; free bloomer and thrifty. Perle des Jardins—a free blooming, lovely, yellow rose, second only to Marechal Niel in popularity. The Bride—a pure white, delicately scented rose; a free bloomer, with lovely buds. Papa Gontier—a remarkably free blooming, strong and rapid growing rose, of an intense shade of rich crimson. Belle Siebrecht—in color, a deep, rich pink; commences to bloom when very small; fine in both bud and flower Sunset—free blooming, strong and robust in growth, with large and elegantly formed flowers and buds; in color it is a rich golden amber, or old gold, elegantly shaded with dark, ruddy crimson, resembling the beautiful tints seen in a summer sunset. Niphetos—the loveliest of all white roses for winter blooming; lovely, long pointed, snow-white buds; one of the freest blooming roses in cultivation. — Am. Agriculturist.

CACTUS DAHLIAS.

Fig. 1462.—Cactus Dahlias.

WE are much pleased to receive from a member of our Society in Prince Edward Island, Mr. G Herbert Hazzard, of Charlottetown, Prince Edward, Island, a photograph of some of his Cactus Dahlias, which we think well worth engraving for the benefit of our readers. Mr. Haggard writes:

"I have over forty varieties of Cactus Dahlias and about twenty of Decorative, besides Show, Fancy and Pompon. The white one on the table below the dark cactus is a real beauty. I took first prizes in Halifax, for Cactus, Show and Fancy, but in Pompon they threw mine out because I had several more than the prescribed number. I also took first for collection of not less than twelve varieties; also first for collection of gladiolous twenty-five varieties and six in each variety; and for sweet peas, collection eight varieties in this lot, I showed forty-two varieties so did not do so bad considering I had to pick my flowers two days before they were judged, and carry them such a long distance, leaving in the morning at seven o'clock and not getting to Halifax until 7.30 p.m., flowers not being opened until next morning.

THE CYCLAMEN.

FIG. 1463.—

THESE delightful winter and early spring flowering plants have of late years been so much improved that we shall scarcely recognize the small, comparatively insignificant blooms we used to meet with, in the splendid, large, broad-petalled, distinctly-colored forms and highly-scented types of this flower, now so plentiful. For this great change we are much indebted to such men as Mr. Warren, of Isleworth, also a Mr. May of the same place. Each of these growers have low spanned houses, graded in temperature, in St. Margarets, West Middlesex, in which the culture is about the same, but there is a difference in the strain. The old type of the grandiflora family, with its long stems and large flower, has given place, in response to the persistent efforts of these and other London florists, to a dwarf stem of leaf and flower, without any diminution in size of bloom. They are now of a very robust constitution, remarkably free-blooming, and in every way well adapted to house cultivation, and as house plants have few equals, if any superior. Few flowers respond with such a generous profusion of bloom, to moderate care and cultivation, as does this plant. This fact is impressed upon me more every season as I look upon the magnificent array of color, smiling as they stand upon the benches, clean, bright and cheerful, like the refreshing greetings of the sunbeams after dark and dreary days. It gives a thrill of real delight, such as the millionaire cannot abstract from the intrinsic worth of his gold, as we approach them and count, as I did this morning, on one plant nearly 100 perfect blooms, and buds uncountable, nestling at the base of the leaf stems and on the crown. To the ladies, let me say, this attractive and very useful flowering plant, flowering from October till August, is very easy to manage, even to growing from seed. Get the best strain of seed—Williams' prize strain is even now superseded. Sow in a small box about two inches deep, in soil of a light nature, press the seed its own depth into the soil with a flat piece of board or shingle and cover lightly. Place in temperature of 55°, or thereabouts, cover with glass for a while in order to keep slightly moist, not wet. After a while lift the glass and keep evenly damp. You will soon see the bulblet appear.

Then, as soon as they have two leaves, if they need more room prick off into another box farther apart, or better still, into small or two inch pots singly. This is the better way, not five or six in a pot. Grow on and give plenty of air, and don't let the hot sun strike them directly, as they are fond of shade, specially in hot days of fall and spring months. Re-pot as soon as roots move well to the pot, and let the soil have a little well-decayed manure mixed with it; drain the pots well, keep them growing at 55° to 65°, and you will soon be rewarded with bloom that will delight you. I like the gran-

diflorum type of the French growers at the present time. Having now on the benches over 1,000, I am able to see the difference of type in color, form and flowering nature. If you prefer buying a plant already in bloom, you can get of your nearest florist your choice of color, etc., and treat it as I have indicated, taking good care to keep off the green-fly (perhaps its worst enemy), also the thrip—a thin, long, black bug which will quickly destroy the follage by eating its fleshy underparts. Watch them closely on the younger leaves, and you can easily destroy without the aid of any insect destroyer. If your husband smokes tobacco, ask him to throw a whiff or two under their leaves, and Mr. Fly will soon grow dizzy and fall on top of the pot, then shake him off and destroy. If you try to keep your corms or bulbs to a second or third season, don't dry them out to a withering degree; but simply let them rest, with sufficient life in the soil to give nourishment to the bulbs, in which lies all the force, energy, or vitality preparing for another and greater effort next season in abundance of bloom and foliage. Start them afresh by watering more freely any time from August to October, as you may wish them in succession; also grade the temperature, as you may wish to keep back or hasten into bloom. By all means try and get a packet of seed of the pure white, heavily scented strain, or a bulb, and you will be delighted. Sow in the house, we would say in the greenhouse, in August, September or October. The cut blooms also you will find lasting and very useful. Should any reader like to ask a question, I shall be pleased to give an answer, if able, through these columns.

I may say this plant has some six species, bearing such names as Cyclamen European (hardy). Cyclamen purum (small flowering), Cyclamen giganthus grandiflorum (large flowers). Another one is, Alpina asperula (or violet of the Alps), so-called because the Alpine ranges are its native home, but of them all I would advise you to get the Cyclamen giganthus grandiflorum.

As a rule the cyclamen grows slowly, but for the gardener who will have patience its culture from seed is perhaps surer and easier than that of any other plant of its class. The seeds may be sown any time between September and March, the sower fixing upon it according to the time bloom is wished from the plants. It takes from twelve to fifteen months from the time the seed is sown to get the most willing cyclamen plant into bloom. The seed-pan, pots, or boxes must be well drained, containing about two-thirds rough drainage and one-third light, loamy soil. I have found it a good plan to make this loam rich with well decayed manure from cattle stalls, in order to hurry up the slow growing, little tubers from the very first. If the soil is made quite rich all through the subsequent repottings, considerable time may be saved in getting the plants into bloom.

If the seeds are sown thinly the first usual transplanting may be omitted. It is not necessary to cover them more than an eighth of an inch. The seed-pans should then be set where they will have good light, but no direct sunshine. If the temperature can be kept near 60° it will be better for the young plants At the first transplanting, necessary when they are three weeks old unless sown thinly, the seedlings should be set two or three inches apart in boxes of rich soil, or in small pots. When large enough, transfer them singly to five-inch pots. If plenty of water and fertilizers are given they should grow actively all spring and summer.

The best soil that I have tried for

them is three parts of sod loam to one of well decayed fertilizer from cattle stalls. In fine weather syringe or sprinkle the plants every day unless they are in bloom; morning is the best time for this in summer, the afternoon in winter. Insects that cut off the stems of the cyclamen or eat the leaves, can be kept away by scattering fresh tobacco stems under and around the plants. The cyclamen is now largely treated as an annual by many of the best gardeners, fresh seeds being sown every year, and the plants thrown away after their first season of bloom is over. We amateurs usually prize them too much for this, and know from experience that a well-grown cyclamen will give fine bloom until three years old.

WM. BACON.

Orillia.

CARE OF VINES.

THE care of vines is something that requires a good deal of thought if the best results are desired. The close-clinging Ivies and the Virginia creeper grow nearly smoothly, covering any surface exposed to them. But Roses, Honeysuckle, Wisteria, Clematis and many others are inclined to grow in masses or clumps that are not graceful nor desirable. To avoid this they should be taken from the trellises every autumn. This gives an opportunity for repairing and painting the framework, as well as for trimming the vine. Honeysuckles should be pruned severely. The flowers are produced on new spring growth. This vine is inclined to grow in masses, and the inner limbs die. The effect on a piazza is unsightly, so the vine should be pruned well. Cut off all the slender limbs along the main vines, and train the strong limbs as you wish them them to grow. Roses should be cut free of most of the old wood, and the long new sprays securely fastened with soft strings. In cutting do not shorten the vine. Wisteria is prettier trained horizontally just under the eaves. It tangles badly in the most intricate manner, and the pruning knife is good for it, but keep the long, flexible limbs.

There is much complaint of vines rotting walls and fences. Pruning is at least a partial remedy for this. No vine is handsome if allowed to tangle and twist about itself, and any vine is lovely if properly trained. Very beautiful effects may be produced with even our annual climbers. If these are planted deep and early, enriched and watered, they will prove very satisfactory, and are preferred by many persons to vines that must remain in place all winter.—Park's Floral Guide.

HOW TO PLANT A BULB.

IN the accompanying sketch I have tried to show how a Hyacinth bulb would look when planted correctly, if the jar was transparent. The figures represent the kinds of soil used. No 1 is an inch layer of burnt bone, charcoal or pebbles to insure good drainage. No. 2 is an inch layer of whole decayed manure, placed over the drainage so that the rich, prepared soil (which is No. 3) cannot settle in the bottom of the jar and wash away. No. 4 is clean, sharp sand which is placed around the bulb to keep it from decaying by coming in contact with noxious matter, which, even with the best care, will sometimes slip into our potting soil. No. 5 is fine, rich manure to supply the bulb with nutritive matter. The jar is a six-inch one, and only one large-sized bulb is set in it. Never crowd a bulb; it will resent it.—Park's Floral Magazine.

FIG. 1464.—HOW TO PLANT A BULB.

POTTING PLANTS.

THE first essential is to get the right kind of soil for the pots—a nice black, friable soil, full of leaf mould, is best. In order to plant trees, principal elements of plant food are necessary—1st nitrogen, 2nd oxygen, 3rd phosphoric acid. Leaf mould supplies the first. Each element has a specific effect on the plant. If fed too much nitrogen the effect is an excess of leaf; if too much potash, the result is more fruit or flowers but a stunted growth. A well balanced plant ration comprises one part garden soil; one part turf sod, full of fine root fibres and one part of half-rotted manure and sand in equal proportions. It is possible to have the soil too rich, so sand is added to make it porous and assist drainage. Manure from the cow yard is best, as it is not as strong as other kinds. Soap suds is also a good fertilizer. It is a good idea to keep a box of suitable soil in the caller where it will be handy for winter potting. Fragment of broken pottery or brick should be placed at the bottom of the pot to help the drainage. One of the first things to do when potting is to give the plant a good drink—thoroughly saturate the soil, and in planting cuttings compact the soil firmly about the tender shoot, in order that the food in the soil may be made available.

In re-potting, many people make a mistake in changing from a small pot to one too large in order to save trouble. Growers will obtain more bloom by keeping the plants in small pots, changing to the larger sizes gradually. By giving the pot a slight jar and turning it upside down the pot can be lifted easily off. And if fine shoots are seen to be interlacing the outside of the earth the plant should be transferred to a larger vessel. PROF. CRAIG before Port Hope Horticultural Society.

Our Affiliated Societies.

HORTICULTURAL SOCIETY EXHIBITION AT ORANGEVILLE.—The members of the Orangeville Horticultural Society have every reason to feel proud of their first exhibition. The affair took place in the Town Hall, on the afternoon and evening of Thursday, October 6th, and was a success in every sense of the term. The Society has been in existence for less than a year, but the display of plants, flowers and fruits which was in evidence in the Town Hall on the above date would have done ample credit to many an older and more pretentious organization. Particularly gratifying was the exhibit, in view of the fact that prizes were not awarded, and the exhibitors had therefore no pecuniary inducement to stimulate their interest in the show.

That the Society's first effort in the exhibition line has attracted a good deal of interest was very evident from the immense throng of townspeople who crowded the hall on Thursday evening, to view Orangeville's choicest in fruit and flower, and listen to the sweet music rendered by the town orchestra. That the visitors to the show were satisfied and delighted was very apparent to even the ordinary observer. On all hands could be heard comments of the most favorable nature. There seemed to be but one opinion, and that was that the show was a success.

To make room for the exhibit, the seats were removed from the hall, as far back as the raise in the floor, and replaced by five long tables, and a short one which was placed crosswise at the back end. The three tables on the south, the short one in the rear, and the front of the stage, were laden with a profusion of beautiful plants and flowers, whose arrangement was at once tasty, artistic and symmetrical.

The two north tables were covered with fruits, nicely interspersed with cut flowers, and a backgroand of plants. The orchestra occupied the stage, but was well-nigh hidden from view by the mass of flowers and foliage with which the front part of that structure was thickly adorned. Above this the front of the stage was neatly hung with red, white and blue bunting, flags, etc.

In the evening the scene was one of animated beauty. The brightly lighted hall, the moving throngs of people, the hum and chatter of merry conversation, the handsome dresses of the best and prettiest of Orangeville's fair ones, set off and relieved by the sombre green of the wealth of the conservatory, and the soft and delicious strains of the dreamy waltz or livelier march, combined to effect a particularly pleasing *tout ensemble*.

Altogether, the show was an unqualified success, and the officers of the Horticultural Society have every reason to be satisfied with their first exhibition.

THE HAMILTON HORTICULTURAL SOCIETY has made a liberal distribution of fall bulbs to each member, at a cost, wholesale, of 65c. per member. This distribution took place on Saturday, 15th October, and each member received the following collection of eighteen bulbs, viz. :—3 hyacinth bulbs, white, Grandesse, blue, Chas. Dickens, pink, Norma; 9 Narcissi, 3 Don Sion, 3 Incomparable, and 3 other kinds; 1 Lilium Harrisii, 1 L. speciosum rubrum, 1 L. speciosum album, and 3 Giant snowdrops. These liberal gifts to each member must be far more helpful to the interests of the Society than the same money given in prizes to a few professional prize seekers; for each member shares equally in the benefits.

BULBS.—At a recent meeting of the Hamilton Horticultural Society, Mr. Charles Webster read a fine paper on winter flowering bulbs, a copy of which we hope to secure for our readers at a later date.

The President, Mr. A. Alexander, after the discussion of Mr. Webster's paper, supplemented what had been said by referring to the usefulness of an abundance of hardy bulbs to make the garden bright and increase the interest in our favorite pursuit. He also named those bulbs most useful for out-door work, strongly urging the planting of only hardy ones, and gave a detailed account of how he potted and cared for bulbs for indoor culture, whether in the greenhouse or house-windows. The soil he recommended was a mixture of loam, thoroughly rotted manure and sand in equal proportions. If the manure could not be had thoroughly decayed, the leaf mould from the woods, with a few handfuls of bone-meal would do. The pots to be used should be the five or six inch size. Before using see that they are cleaned inside and out by steeping and scrubbing in water. Place over the hole in the bottom of the pot a piece of broken pot or slate or flat stone, over this put about an inch of beach gravel or potsherds broken small, with a thin layer of moss or half decayed leaves, to keep the soil from being washed into the shingle and so destroy the drainage. Fill in on this the soil, if for hyacinths to within two inches of the top. Tap the pot on the ground or something solid to make the soil settle. When filled as indicated, set the bulb in the centre, but do not press it down, and fill in another inch of soil, so that when finished a clear inch is left so as to ensure perfect watering from time to time. Gently press the soil around the bulb, which will be about half out of the soil when finished. In a six inch pot sometimes three medium sized hyacinths are placed, say a red, white and blue; but if the bulbs are full sized, first class, one only will give the best results.

Of Von Sion, Paper White and other narcissi having good sized bulbs, three or four or five may be placed in one pot. In the case of narcissus the soil should just cover the bulbs. If the soil is fairly moist when used, it is better not to water for a few days, but on no account are they to be allowed to become dry after growth of the roots has begun. After potting, bulbs should be set in a dark and rather cool place in the cellar or outhouse for several weeks. In the case of most of the narcissi, Freezias and others, they may be brought up to the light, and a slightly higher temperature, as soon as they have made about an inch of growth; but hyacinths and tulips should not, and cannot be forced into bloom before their time. The exception to this is the Roman hyacinths, which may be treated as the narcissus without much harm.

With proper drainage in the pots, there is not much danger of over-watering after the plants have fairly started to grow, although the soil should never be in a sodden condition. Of course some hyacinth bulbs may be grown in a smaller pot than I have named, say a four inch, but the spike of bloom is not so fine in size or form.

With a little care and planning, a succession of bloom may be secured through all the bleak weeks of winter, which will more than repay the labor and money expended, and be a daily source of joy in watching the development of the beautiful blossoms. I would never recommend the forcing of tulips. Their place is in the garden in May; and I think so of the crocus. They and the tulips give the least satisfaction when grown indoors.

PORT DOVER HORTICULTURAL SOCIETY.—SIR,—I enclose to you for publication the Secretary's Report of the Port Dover Horticultural Society, read at the September meeting, held in the Town Hall, Pt. Dover, on the evening of September 22nd. The following is the report:

"On the 7th day of February, 1896, there met in this hall 17 gentlemen, who came for the purpose of organizing a Horticultural Society. Thinking at that time, that there could be a union society of the Township of Woodhouse and of the Village of Pt. Dover, but on receiving instructions from the department of Agriculture we found that Horticultural Societies were only allowed in cities, town and incorporated villages, never-the-less, these gentlemen elected their President, Mr. James Symington, who is with us this evening, and as Vice-President, Mr. C. C. Olds. It was through the untiring efforts of these two gentlemen, aided by our worthy Editor, Mr. L. G. Morgan, (who has ever been ready to help by means of the press), that this society has an existence, but in justice to the members who formed the first Board of Directors, they found men who were willing to do their utmost to further the interest of the society. We had monthly meetings during the whole year with the exception of the month of November, of course our attendance was small but those who attended always felt well paid for coming, for there was always some subject for discussion. We had no sweet strains of music to cheer as now. By the 1st of September we had sent to Mr. L. Woolverton 39 names as subscribers to the HORTICULTURIST. On the evening of January 13, 1897, as per statute governing Horticultural Societies, officers were elected, and the society received its name of "The Port Dover Horticultural Society," in affiliation with the Provincial Society. By the 1st of September we had a membership of 70 and received a grant from the Government of $39, based upon the membership of last year. At the present time our membership is 74, included in that number we have seven lady members. We hope for the year 1899 that that number will be thribbled. All who have attended these meetings for the past two years cannot but realize the fact that this institution has been a great educator in the management of fruit trees and flowers.

During the year 1898 this Society has given to its members (who saw fit to avail themselves of the gift) a present of 50 cents worth of wild flowers, shrubs, bulbs, etc., to which each member which came from the following four sources:—trees and shrubs, from Grimsby Nurseries; cannas and gladioli, from H. H. Groff, Esq., Simcoe; coleus and geraniums, Campbell Bros., Simcoe; sweet peas, nasturtiums, mignonette, hops, etc.; from Vaughan of Chicago. This Society has given through its secretary, together with orders, more than 50 cents worth, the following trees, etc.:—apple trees 88, pears 36, peach 84, plums 25, cherry 42, grapes 10, apricots 2, quince 8, strawberry plants 230, raspberry plants 74, blackberry plants, 267, clematis 10, roses 21, snowballs 2, other plants 14, gooseberry 9, currants 10, making a total of 707 trees, and cannas 39, gladioli 34, geraniums 7, coleus 7, sweet peas 10, nasturtium 10 pkts, mignonette 6 pkts, Japan hops 11 pkts. Representing a cash value from all sources of $67.55.

In conclusion, I wish to thank the members of the Society for the interest they have taken to further the interests of the Society. Everything goes off harmoniously, and I desire to thank the string band and quartette, for their efficient services during the past year and a half; for I think, without music, our meetings would have lost their cheer. I also desire to thank those ladies who have contributed to our enjoyment by visitations; also to thank the Municipal Council for their kindness in giving us the use of this hall to hold our meetings, free of charge.

I consider the Society in a very prosperous condition at present. Its membership is composed of the very best in town and country, and we need fear nothing as long as we have such members; the Society is bound to succeed.

All of which is respectfully submitted,

W. J. CARPENTER, *Sec.-Treas.*

October 17th, 1898.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter or Post-Office Order are at our risk. Receipts will be acknowledged upon the Address Label.

ADVERTISING RATES quoted on application. Circulation, 5,000 copies per month.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

Notes and Comments.

A TERRIBLE CYCLONE visited the Niagara District in September, breaking down and upooting strong trees, unroofing factories, carrying away houses and churches, and of course destroying the fruit crop along its whole course, from Port Dalhousie to Merritton and onward. How fortunate that its course was limited in width to about 100 yards.

THE NOVA SCOTIA PROVINCIAL EXHIBITION at Halifax had a fine fruit show of about 2,000 plates of apples, pears, plums and grapes, the last week of September. The Horticultural Hall was under the care of Mr. J. W. Bigelow, Supt. of the Nova Scotia Horticultural Society. Prof. Sears, of the Horticultural School at Wolfville was on hand with microscopes to show objects of interest to fruit growers.

THE MINNESOTA HORTICULTURAL SOCIETY at their December meeting recommended the following three varieties of Russian apples as alone really worthy of cultivation, viz., Duchess, Hibernal and Charlemoff.

SPRAY FOR CABBAGES AND CAULIFLOWER.—The growing of these vegetables of late years has been most discouraging, owing to the cabbage worm (*Pieris rapæ*), and the cabbage looper (*Phesia brassicae*). Bulletin 144, Geneva Experiment Station, treats of the successful treatment of these enemies by the use of the Resin lime mixture, the preparation of which is therein described. By the use of it the yield can be increased 60 per cent. to 100 per cent.

DEFINITE RESULTS were obtained in

an experiment in thinning Kieffer pears at Maplehurst this season. Two trees on which the fruit had set very heavily were selected, and the smaller one (bearing approximately about six-sevenths of the crop on its companion tree) was thinned on the 26th May, very shortly after the blossom had fallen. Eleven-twelfths of the fruit was removed. As early as the 4th July a visitor to the farm being asked if he noticed any difference between the two trees, remarked on the superior size of the pears on the thinned tree. Both trees were picked on the 22nd of Sept. The thinned tree gave three and a third baskets, and the tree not thinned only two and a third, and the pears on the thinned tree were about twice the size of those on its companion tree. In view of the fact that Kieffer pears usually load very heavily, and also are much improved in quality if removed from the tree at a much longer time before maturity than other pears, these results would seem worthy of further test. In the case of pears in general, an early thinning soon after the blossoms fall, would seem to lessen the natural drop from the tree, a greater number of fruits coming to maturity on the thinned trees than on those not thinned. Late thinning of pears would seem to be useless and unprofitable. In the case of early thinning it is yet doubtful whether the increase in the harvest will compensate for the expense of thinning.

CANADIAN FRUIT AT OMAHA.—We are pleased to receive word from Mr. H. C. Knowlton, Commissioner in charge at Omaha, that the shipments of sample fruit sent him are arriving in good condition, and are creating a favorable impression upon the people there, who have entertained the common erroneous impression that Canada is a land of snow and ice. Shipments have gone forward from the Central Experimental Farm, Ottawa; from the Experimental Farm at Agassis, B. C.; from Essex and Lincoln Counties in Ontario, and from Wolfville, N. S.

THIS IS A BUSY MONTH with the fruit grower. His orchard needs ploughing; rubbish must be cleared up and burned; the vineyard may be pruned; the raspberry plantation cleared of old canes; currant bushes may be transplanted; ladders and implements should be cleaned, the woodwork painted and all put away in a dry sheltered place.

THE AMERICAN APPLE BARREL.—The U. S. National Apple Shipper's Association passed the following resolution, August 6, 1897:—"That this Association recognizes as the standard barrel for apples, a barrel which is of the capacity of a flour barrel, which is 17⅛ in. in diameter of head, and 28½ in. in length of stave, and bulge not less than 64 inches, outside measurement."

GRADES FOR APPLES.—We notice the grades adopted by the U. S. National Apple Shipper's are about the same as those adopted by us in our export trade to Great Britain, which we call A No. 1, and No. 1. The following is the resolution of that Society:—"That the grade No. 1 shall be divided into two classes, A and B. That the standard for size for class A shall not be less than 2½ inches in diameter and shall include such varieties as the Ben Davis, Willow Twig, Baldwin, Greening, and other varieties kindred in size. That the standard for class B shall not be less than 2¼ inches in diameter, and shall include such varieties as the Romanite, Russet, Winesup, Jonathan, Missouri Pippin, and other

varieties kindred in size. And further, that No. 1 apples shall be at the time of packing practically free from the action of worms or defacement of surface, or breaking of skin, shall be hand-picked from the tree, and of bright and normal color and shapely form."

THE WHITESMITH GOOSEBERRY—The finest samples of Whitesmith gooseberry we have seen this season were sent us by Mr. Thos. Beall, of Lindsay. Good samples came from Mount Forest, and still better from Brampton, but none equalled his; so we wrote, asking conditions under which Mr. Beall had attained his success. In reply he writes:

I know of nothing peculiar in either the climate or the soil in this locality which especially tends to the production of finer fruit than is elsewhere produced. The soil is, generally, a heavy clay, with a large admixture of limestone pebbles about the size of potatoes. The requirements for the production of superior fruit—gooseberries—seems to be:—that the soil be kept well cultivated to a great depth; stable manure liberally and judiciously applied; the bushes to be annually pruned, so as to prevent the growth of too much wood, both in number of shoots and in their length, and in such a way as to allow the freest possible circulation of air through the bushes, and at the same to permit of a sufficient growth of fresh wood to exclude the sun's rays from the fruit during July, when the thermometer may range from 85° to 95°: and also, that from the time when the leaf-buds begin to enlarge in the spring until the leaves are about to drop in the autumn, the bushes be continuously sprayed with copper sulphate, Bordeaux mixture, or potassium sulphide Each of these applications may be advantageously given at proper times.

THE BURLINGTON HORTICULTURAL SOCIETY will receive some notice in the next number. We have photographs of some of the orchards and of some of the fruit growers of that locality, and invite further contributions.

We shall welcome photographs of gardens, flowers, prominent fruit growers, with notes about same, from any of our Societies, or individual members who will favor us in this regard.

CANADIAN CHESTNUTS are quoted in Montreal at 8 to 10 cents a pound; and shelled walnuts at 22 cents a pound.

CANADIAN GRAPES are advancing in price in Ottawa and Montreal markets, the supply being far short of the demand. The crop is really much below the average in quantity. Mildew has also been troublesome in many cases, where not sprayed.

THE PRINCE EDWARD ISLAND HORTICULTURAL SOCIETY has been formed under very favorable auspices, thanks to the exertions of the Rev. A. E. Burke, P.P., of Alberton. We have just received from the Secretary, Peter McCourt, twenty names of members of this Society, who wish to become also members with us and receive our literature.

THE lovely lawns and flower-beds round the Parliament buildings were looking very beautiful this fall; when the plants were in full bloom, the artistically arranged scheme of coloring was well worth going to see. Some southern ladies who have been staying in town were admiring these grounds greatly the other day, as, indeed, all the strangers have done who have gone to see the Legislative buildings this season. Mr. Houston, the head gardener, deserves great praise for the success of his labors and of those which are carried out under his direction.

POINTS ON GRADING.—The Fruit Trade Journal gives the following hints: Fruits and vegetables need to be graded the same every year. Smaller potatoes

may be sold more readily in August and September than later in the fall. Northern cities depend on the stock south of them in early fall, and usually that is not so fine as the late northern stock. If one ships before time for storing, the market takes smaller tubers than it will for winter use. When there is only half a crop of any kind of vegetables or fruit one can safely ship a product that would be not wanted at all in a year of abundance. The rule is, however, that a city pays good prices for a choice article, while a local market is the safest for a poor article. Ship only such crops as are or can be made choice in quality, and accept whatever may be gotten at home for the second class stuff.

THE ANNUAL MEETING of the Ontario Fruit Grower's Association will be held in the City Hall, St. Catharines, on Thursday and Friday, December 1st and 2nd; sessions to begin each morning at 9 30; each afternoon at 2 p.m.; and each evening at 7.30. An interesting list of topics will be brought up for discussion, and every meeting is open to the public without any charge.

Among the persons expected to be present and aid us at these meetings are Dr. Wm. Saunders, Ottawa; Mr. C. C. James, Toronto; Dr. Mills, O. A. C., Guelph; Mr. C C. James, Deputy Minister of Agriculture; Prof. J. W. Robertson, Ottawa; Prof. McCoun, Ottawa; Prof. Hutt, of the O. A. C. Guelph; Mr. W. M. Orr, Superintendent of Spraying for Ontario, and many others. Suggestions of topics will be gladly received. Write for full programme, to the Secretary, Grimsby, Ontario.

LATE TOMATOES.

PICK your tomatoes when there is danger of frost; handle them very carefully, so as not to bruise them, for a bruised tomato is sure to rot. Place them in a moderately well lighted room where they will not freeze. If convenient, keep them in crates, baskets or boxes, or in piles around the wall, in order that they may be convenient for handling over, which should be done every few days, picking out the ripe and those getting ripe and all damaged ones. Tomatoes handled in this way will nearly all get ripe and be as good as if just picked from the vines, and will extend the tomato season from 2 to 3 months.

Pick your tomatoes when dry if you can; if compelled to pick when wet, spread them out so they can dry and then pile them up again, as they ripen fresher in a pile. If in danger of a frost coming unexpectedly in the night, pull the vines, putting them in piles, covering them up if convenient, if not, only those on the outside will freeze. Frosted tomatoes will not keep when ripening. All tomatoes too small for other use may be pickled in salt, the same as cucumbers, and soaked out and used for pickles, or any other use, the same as fresh ones.

Question Drawer.

Sarah Raspberry.

1034. SIR,—Kindly let me know whether you consider the Sarah raspberry a suitable variety to plant for market. How would it compare with Loudon, Shaffer or Columbia for hardiness and productiveness.

J. PARKINSON, *Portage la Prairie.*

For hardiness we think it speaks well for Sarah that it succeeds so well at the Central Experimental Farm, Ottawa.

Mr. McCoun, the Horticulturist, says of it :—"The Sarah raspberry continues to give good satisfaction here, being productive and making very strong canes. We have not yet compared it with Loudon as regards yield, but I think it will compare well with that variety and other such sorts. It also seems quite hardy."

This raspberry was produced in London, Ontario, by Dr. Saunders from seed of Shaffer. The plant is a moderate grower, and suckers freely. The fruit is large and round, color deep garnet and very juicy, and very rich ; in season it succeeds the Cuthbert.

Ginseng.

1035. SIR,—Can you tell me where I can get Ginseng seed ? I would like to try a bed of it, but do not know where to get the seed.

ALFRED LAKE, *Newcastle, Ont.*

Ginseng seeds and roots are offered for sale by George Stanton, Summit Station, Onondaga County, New York ; or by H. P. Kelsey, 1123 Tremont St., Boston, Massachusetts. The seeds are sold for $1.50 per ounce, and the roots at from $3.00 to $6.00 per hundred.

Very truly yours,

LYSTER H. DEWEY,

Assist. Botanist, U. S. Dep. Agr.

* Mr. A. Mickle, Grimsby, Ont., also had a few seeds for sale.

Pears for Export.

1036. SIR,—I am about to plant a pear orchard for export, as I think when the Cold Storage is brought down to business shape. there ought to be something in pear culture, My idea is to have two fall and one or two winter varieties. Will you kindly advise me as to whether the Duchess, Kieffer, Lawrence and Anjou would be the right kinds, and if not, what others would do better.

W. B. STEPHENS, *Owen Sound.*

It is yet too soon for us to say what varieties of pears will take best in the English market, but one thing seems certain that small pears are not wanted ; and very often this is the fault of the otherwise excellent Lawrence. We had fine prices for Bartletts, Boussock, Clairgeau, Bosc, Duchess, Anjou and Kieffer, especially the Clairgeau and Anjou. We doubt not that the future planter will select among these when he plants an orchard for export. The Anjou succeeds best on the quince, while the Clairgeau does well either as a dwarf or as a standard.

At Thornbury we noticed a very fine standard Clairgeau, bearing heavy crops of magnificent fruit, but unfortunately the owner thought it was Louise, and had shown it at various fairs for that variety, and had actually been awarded the 1st prize ! !

Wash tea roses frequently with clean water. Give liquid manure once a week, but have the soil moist when applied.

"Oh, Bridget ! I told you to notice when the apples boiled over." "Sure I did, mum. It was quarter past eleven when they boiled over."—Brooklin Life.

Our Markets.

THE APPLE MARKETS.

ONTARIO fruit growers who have been digging out their apple orchards by the roots, and beginning over with planting pears or plums, and waiting some years without a crop for the young trees to grow, will feel chagrined this season at the high prices for this king of fruits.

We can easily see the sense in top-grafting an orchard with those varieties most wanted in the great markets of the world; but we cannot sympathise with those who get discouraged with the business on account of one or two seasons of low prices.

That apples will prove a bonanza this season where quality, size and color is right, is evident from reports from all the markets. Even the Trade Bulletin of Montreal, which is always so guarded in its statements in the interests of the buyers and shippers rather than of growers says in its issue of October 7th:

"There will unquestionably be a good demand for Canadian apples in Great Britain during the coming season, as the English crop is very poor, some going as far as to characterize it the worst within the past ten years, and cable reports state that it is nearly all marketed. The Continent, it seems, is nearly as badly off as England, and will have to import considerable, and Germany has already been buying in Belgium. We notice that the large importations of fall fruit into Liverpool, as we anticipated, is having its effect, as Monday's market there showed a considerable decline. On the other hand, Glasgow, which was not ever-supplied, made some good sales of Canadian fruit, which should be satisfactory to shippers. Sales were made in Liverpool last week which netted shippers in the West $1.85 to $2, and $2.10 per barrel. Monday's sales, however, will not turn out such good nets. Every one seems to have a good opinion of winter fruit, and those who hold them say they are confident of a profitable market on the other side.

Of course we write in the interests of growers, being ourselves one of the most extensive apple growers in Canada, and perhaps we may at times be too sanguine, but when buyers are paying as high as $2 a barrel for the fruit it is evident that good prices are well assured. Here for example is another extract from the Trade Bulletin of the same date.

"As stated in these columns last week, a large proportion of the winter apples has passed into second hands, and it has since been reported to us on pretty reliable authority that it is known that 150,000 to 200,000 bbls. have been contracted by six or seven different firms. As high as $2 has been paid for the fruit, which would bring up the price to $2.50 and $2.55 per barrel on board cars, which is considered quite high enough. The general range, however, has been from $1.80 to $2.05 free on cars. The exports of apples from this port last week were 30,502 barrels against 23,435 barrels for the week previous, and from all ports 42,017 barrels, against 23,435 barrels for the week previous, and 22,786 barrels for the corresponding week last year."

W. N. White & Co., London, England, write in September Trade Journal, the following report on apple crops in Europe and America, which goes to confirm what we have said:

"We say, England has a much worse crop than last year; taken generally, the worst for ten years, and in a fortnight there will be no English fruit left, except a few apples. The pear crop is almost a complete failure. Late plums, owing to the extreme dry weather, are very small, and will be finished next week.

Belgium, the greatest continental exporting country to England, had scarcely any apples at the commencement of the season, and the few now there will be wanted for home consumption. In the districts bordering on Holland, which is their principal early apple country, the bulk of the fruit has gone to Germany.

Holland has the worst crop known for many years.

France, in the south, has some apples, but in the north, owing to dry weather, her crop is almost a total failure, all she has to export

will be done in a month. Last year in the north-east she had a very heavy crop, indeed, and in one district the Bellefleurs were reckoned by the thousands of tons. This year there are none.

Germany has a few apples, but not enough for her requirements. She will be an importer this year.

The outlook of England and the Continent is much worse than it was two years ago. At the time it was calculated you could send 3,000,000 barrels, and we made the statement that if the fruit was shipped in proper order we could take them in England and the continent. It is true that owing to a lot of fall fruit arriving in bad condition prices were very low before Christmas, but afterwards higher prices prevailed, and the season finished up well. That season you shipped 2.919,-846 barrels. Last year the total only amounted to 913,996 barrels, particularly those arriving here after Christmas. Looking at the various figures we find that 360,000 of these were shipped from New York, the bulk from Western States, which we are told this year are very bad, and they will be buyers for home consumption instead of export. Boston sent 176,000 odd, Montreal and Portland about 300,000 and Nova Scotia about 83,000.

According to my information we think the crops this year can be put as follows :

Nova Scotia, if all reports are true, her exports will reach in the neighborhood of 200,000 barrels.

Montreal and the remaining Canadian ports should have about 450,000 barrels.

Boston and New York may be near 450,000.

If these figures are at all correct, you will have for export this year about 200,000 barrels more than last year ; and we say prices here will rule quite as good as last year as the conditions this side are much worse than last.

PHILADELPHIA.—Messrs. E. B. Redfield & &o., 405 New Market St , write under date 11th October : "Choice solid crab apples scarce and wanted $4 to $5 per barrel. Fancy Maiden Blush, Snows, Gravensteins firm at $3 50 to $4. Other choice fall red apples sell well also."

Northwestern Fruit Market.

While Canadian fruit-growers have been assiduously cultivating the British market, they seem to have, to some extent lost sight of the possibilities of trade afforded by the Northwest Territories, where tender fruits cannot be grown. Latterly, however, the fruit-growers of the Niagara district have given some attention to the Northwest market, and they hope by the adoption of the proper methods of selection and shipment to avail themselves of the large and constantly increasing demand of that portion of the country, which has been met almost entirely by the importation of California fruits. Prof. Robertson, though busily occupied in promoting Canada's export trade in natural products, has not been unmindful of the necessities of the west or of the opportunities in this direction of Ontario fruit-growers. He says that there are three essentials to a profitable trade in fruit between Ontario and the Northwest. One is the sorting and selection of fruit, so that the consumer will receive good quality throughout in condition, size, and, as far as practicable, in shape. There is a great risk in handling the more tender varieties of Canadian fruits, because if their liability to spoil quickly after they are received. The natural life of these fruits can be doubled and even trebled if they are cooled before they are put on the railway cars. This treatment retards ripening and thus prevents decay. If they are put in a hot railway car immediately after being picked and after transportation placed in cold storage their life will have by that time almost terminated, with the result that there is pecuniary loss to the dealer and dissatisfaction with the householder. The actual loss of fruit from decay is tremendous. It is not a matter of so much importance to the fruitgrower, as is the loss occasioned by the diminution in the consumptive demand from the dissatisfaction of those who have purchased fruit and found it partly spoiled, which is followed by the breaking down and the keep-down of prices through the feeling of retail merchants and consumers that the risk is too great to handle and to purchase fruit in large quantities. Careful selecting and proper cooling at the point of shipment would obviate these difficulties. The department, with the view of encouraging the Northwest fruit trade, has been urging fruit-growers to use for all fruits intended for distant markets in Canada ventilated packages, as far as practicable, to cool fruit before it is packed, and to use only refrigerator cars for its carriage. The fruit growers about St. Catharines have put up a large icehouse for cooling their fruit before it is dispatched from the station, and they are now going into the Northwest trade. Hitherto their returns have been usatisfactory from this source, because of the neglect of the precautions which Prof. Robertson says it is necessary for them to take. Winnipeg dealers have entertained rather a poor opinion of Ontario fruits, and have preferred the California article, because the California growers have adopted these precautionary measures. Another consideration is that while California fruit is inferior in flavor and in quality of the flesh, it is of coarser fibre and does not spoil so readily. The possibilities of the the Northwest fruit market are very great, and with a constantly growing population the consumptive demand is bound to increase.—Toronto Globe.

Liverpool Market.

Messrs. Woodall & Co., Liverpool, write under date October 1st, as follows : "Since the commencement of the season 49,580 bar-

rels have arrived, against 26,085 barrels to same period last year. Most of the arrivals have consisted of the usual early varieties, and landed in very variable but mostly bad condition, which is almost always the case with this description of fruit, and has been especially so this season, in consequence of the intense heat at time of shipment, as also similar weather on arrival here. The quality generally was disappointing, and even if sound, were not such that would realize satisfactory prices, however scarce the supply. There were some few exceptions, which were eagerly competed for, and showed that the market was ready to give extreme rates for suitable sound fruit. During the present week, 24,287 barrels have arrived, and among them were Baldwins and other winter varieties, mostly immature and unattractive, and although it is perhaps early to form an opinion, they have given the impression that the crop is not of fine quality. Notwithstanding this, there has been a very active demand throughout, and has demonstrated that the English markets are now ready to take larger quantities of American and Canadian Apples, and that the prospects are most promising for a satisfactory season. The market closed strong at yesterday's sales at the following quotations :—

NEW YORK—

Baldwins	15/ to 19/6 ..	10/ to 14/
Kings	20/ " 26/6 .	15/ " 19/

BOSTON—

Baldwins	12/ " 14/6 ..	9/ " 11/
Hubbardston ..	12/ " 15/ .	9/ " 11/

CANADIAN—

Gravenstein ..	20/ " 26/6 ..	14/ " 17/
Colvert	13/ " 16/6 ..	10/ " 12/
Maiden Blush .	15/ " 18/ ..	12/ " 14/
Jennetting ..	11/ " 13/ ..	7/6 " 10/

Wasty sell 2/ to 3/ under quotations for slack.

Germany.

A German correspondent of the Trade Journal writes :—The apple crop in our next districts (which are the most important for apples) is fully a failnre, our inland has a half crop, but consisting only of ordinary cooking summer apples which will be finished when the American winter fruit arrives. In my opinion we have never had such a splendid prospect for American and Canadian apples as this year, and there is no doubt that sound colored apples will not only command high prices around Christmas, but also during the whole winter.

Our Fruit in England.

The Financial News (London, England), says :—Fruit-growing has developed so extensively in Canada that native fruits, including grapes, are sold in ton lots. Among the fruits which arrangements are being made to ship to England in larger quantities are pears. Our supplies in the past have been home-grown pears, large quantities imported from France, and considerable amounts from California. "None of these except those grown under glass in Great Britain," says Prof. Robertson, "compare in flesh or flavor with the finest Bartlett pears from Canada. Now that cold storage," he proceeds, "has been provided, it has been demonstrated by trial shipments last year, that pears can be landed in Great Britain in first-class condition. The smaller packages which were recommended by the Department of Agriculture last year are being entirely used this season, with every prospect of complete success. Trial shipments of peaches will also be sent forward. The information gained last year will permit these also to be landed in good condition Hitherto peaches in Great Britain have been a dainty fruit for the very rich only. At the prices at which they can be laid down there from Canada it is expected that they will be used more and more by large numbers of people. Tomatoes have been lande l in good condition in past, and further trial shipments of small quantities will be sent this year. The report is that the British and French tomato crops will ripen about a fortnight later this year than usual, owing to the comparatively cool weather of the summer in those countries. The result of this will be that the largest supply of tomatoes will be in the British markets at the time when the Canadian tomatoes would be fit for sending; consequently, only sufficient quantities this year will be sent to obtain information as to the best method of packing and transportation. Small trial shipments of grapes will also be sent forward. These were landed last year in good condition, but the British public has not yet acquired a taste for the Canadian grapes. Last year a demand was created in some quarters, and the wholesale men say they can handle a limited quantity, but that if a large quantity were sent they would be slaughtered. The policy of the department is to send forward limited quantities of the most likely varieties, with the hope that the trade will gradually and naturally grow.

Foreign City Markets.

City markets in the large cities of the temperate zones at this season of the year are at their best in display of orchard and garden products. Then these distributing centres, the perishable produce of the farm, orchard and garden are very largely sent to the consumers. The origin of the central city market dates back to early antiquity, where we find the "market place" set aside for the disposal of marketable products of all kinds; gradually the crude systems and methods practiced in that early period became changed to suit the conditions of supply and demand of different countries.

A visit to the city markets of foreign coun.

tries furnishes a most interesting theme for study and investigation of methods and systems in comparison with those practised in America. London, the great distributing centre of England, and into whose markets the produce of the world finds its way, has two central markets, "Covent Garden" and "Spitalfields Market." The former, being older and larger, and situated in the heart of London, supplies a large portion of the inhabitants, including the *elite*. The latter is situated in the east part of the city and supplies the poorer classes of the great metropolis; and in times of gluts or congestion of any product in the market is by far the better of the two. Both markets practice the same methods of buying and selling. Each is protected by a shed, covering several blocks, the space of which is divided into stalls, auction stands and temporary storerooms, every available foot of space being utilized. The curbing surrounding the market is lined with wagons from which produce is sold. The rent for wagon space averages about £1 per month, while in the interior, stall space rents as high as £5 per foot, the proceeds of which go into the city funds.

The markets open for the receiving of produce at 4 a.m.; and for the next two hours everything is astir getting things in readiness for the morning sales. Hundreds of wagons empty here their tons of produce. By six o'clock sales begin. The first visitors are the retail grocers from all parts of the city, who hurriedly purchase what their customers demand and rush back to business. Following these come the hotel stewards and boarding house agents. Between ten o'clock and noon the wealthier classes make their purchases. Succeeding them come the commission men, who deal largely with the outside trade.

The English market lacks the variety and taste of display characteristic of the typical American market. This is due to the conservative tastes and habits of the English people, and makes it one of the easiest markets to be supplied by the commission mon or the producers. Fruits sent by cold storage and rapid transit from all parts of the Occident and Orient, packed and arranged in many ways, find their way into this market at seasons of the year when the home supply is exhausted, practically producing a continuous market the year round. The commission men are made up chiefly of Jews, who are thorough business men and excellent salesmen. Their busiest time is during the apple and potato season. Apples are disposed of in hundred and thousand barrel lots by auction sales. Sample barrels only are exhibited at the auction block. To the outside trade in the smaller cities and towns out of London sample baskets of fruit in stock are sent, by means of which the trade is enabled to purchase. Those seeking sales in the English market find that to receive the highest prices, uniformity of package, packed to suit the consumer, is the secret of success. The English buyer appreciates the attempt of the seller to establish a reputation by the shipping of first-class, graded goods, and never forgets either in price or patronage.

The city markets of continental Europe vary greatly. In some of the countries high types of markets may be found; but generally the opposite is the rule, and in many instances the methods employed seem indeed antiquated. In Holland the market gardens of the cities are on the docks bordering the canals passing through the streets. Produce is sold from these docks and from the boats. Market hours are from 4 a.m. to 10 a.m. All sales are made in a quiet way and with a lack of interest. While the fruit and vegetables are spotlessly clean, they are crudely exhibited, usually in second-hand baskets, barrels or crates, occasionally in piles in the bottoms of the boats. All flowers are most artistically arranged and find ready sales, as the Holland people are great lovers of flowers.

In the Austrian cities the markets are conducted in open squares set aside by the government. The produce is sheltered by small tents, awnings and huge umbrellas during the market season in spring, summer and fall. Warehouses and retail dealers consume the products in the winter. In Vienna tolls or fees are collected on all produce sold within the city limits. As the bulk of the fruit and vegetables is sold from wagons and temporary stands, order and display are practised but little. The hucksters' business is tremendous. It is estimated that at least one-third of the city's population is supplied with food by them. The apple shipments to the cities of Austria from the surrounding country are made chiefly in boxes, each specimen being wrapped in tissue paper. Only first-class fruit is shipped in this manner, from seven to eight hundred apples being placed in the box. Second-class stock is shipped in barrels, carefully graded and labeled.

The city markets of Italy are very unsystematically arranged; vegetables, fruits, wines, macaroni and cheese are exhibited in the same booth, giving an intermingling of odors. Yet in spite of this irregularity of arrangement, the Italian is noted for his wonderful methods of display in showing his products. Peaches, plums, prunes and grapes may be seen exhibited on fresh leaves and in baskets lined with cut tissue paper of different colors; onions braided into strands of corn husks, pyramids of "palmagean" and "switzer cheese"—all efforts being made to exhibit in as attractive a style as possible. This is a feature observed among the "Dagoes" in our own country who make our best hucksters and street venders. From early morning until late in the evening, the Italian market is a continnal babble. The produce found there is chiefly made up of home products, a large amount of which is shipped abroad.

The German markets are patterned quite extensively after the plans and methods of the English and French markets. They are very clean and systematically conducted.—Large quantities of foreign fruits of various kinds may be found at all times of the year in these markets, for Germany does not begin to produce fruit in sufficient quantities to supply the home demand.

ARISTOLOCHIA SIPHO.—(Birthwort or Dutchman's Pipe.)

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HARDY CLIMBERS.

Give fools their gold and knaves their power;
Let fortune's bubbles rise and fall;
Who sows a field or trains a flower,
Or plants a tree is more than all.
—*Whittier.*

WHEN one considers the charms of forest and garden, and the profusion of decorative trees, plants, and shrubs, of which Dame Nature has been so lavish, we wonder at the cold neglect with which three-fourths of the world regard it all. Engaged from early morning till late at night with the severe cares of business, either in the office, or on the farm, all is forgotten except what contributes to food or clothing; and the rich treasures of the garden are almost despised. Let the savage be satisfied with animal comforts, but let us, who live in a more favored environment, live on a higher plane, and feed our soul's higher instincts with those beauties of nature and art which are exterior, and which will broaden our ideals and enlarge our conceptions of the beautiful in Nature and Art.

We desire in this article to briefly mention a few of the climbing vines, which, though already familiar to many of our readers, yet cannot be fully appreciated, or we would more often see them decorating our houses, both in town and country.

ARISTOLOCHIA SIPHO.

On page 123 of Volume XX we made reference to the beautiful effect of climbers and other ornamentals in the case of Mr. John Hayden's home at Cobourg. One of the climbers on the gable was Aristolochia Sipho, or Dutchman's Pipe, and we give as our frontispiece a near view of this creeper, which is counted among our most beautiful native climbers. It is called sipho, or tube bearing

from the peculiar shape of its flowers, which resemble a siphon or hook, and in which some see a fanciful resemblance to a pipe. It is quite hardy, and of vigorous growth, climbing to a height of from 15 to 30 feet. It was discovered in 1763.

Mr. Nicholson describes 28 varieties of Aristolochia, and an additional one is mentioned by Mr. Watson, of Kew, with the specific name of *A. ridicula*, because of the droll appearance of the flower, the two lobes on each side of the flower forcibly reminding one of donkey's ears.

Mr. C. L. Allan, in American Garden, says: "In habit, it is both a climber and a twiner, and is therefore unsuited for walls; but its great heart-shaped leaves, from seven to twelve inches in diameter, borne with tropical luxuriance, make a finer exhibition of massive foliage for covering verandas, trellises or other artificial constructions than anything else we know of. Its flowers are extremely curious, being the shape of a siphon or hook, with a long pendent pouch, of a yellowish brown color, borne in May or June. For its perfect development it should have a deep rich soil and a moist situation. It grows eqally well either in sun or shade.

G. W. O. of the Botanic Gardens at Washington, writes in Gardening of *A. elegans*:

"This new Brazilian flowered with us for the first time a few weeks ago, and what a pleasing surprise! With leaves quite as small as those of *A. ciliata*, the flowers in size come near those of *A. gigas*. The leaves are nearly heart-shaped, slightly glaucescent underneath; the flowers, borne on long stalks, are very conspicuous and strikingly handsome. The concave surface of the perianth is beautifully and uniformly speckled with dark claret on a creamy white ground. This species is very floriferous even in a young state, and entirely free from the peculiar camphorous odor common to other members of the genus."

AMPELOPSIS QUINQUEFOLIA.

This word is from two Greek words meaning vine-like, because of the resemblance to the grape vine in habit. There are, at least, two varieties which are natives of North America, viz, the *bipinnate leaved* of Virginia; and the well-known *five leaved*, or Virginia Creeper, which festoons the forest trees in many parts of Ontario, and can be had almost anywhere for the trouble of digging. It is a vine of rapid growth, and, with a little support, will climb to the top of our houses. In autumn, the foliage assumes brilliant red and purple shades, and is therefore a desirable ornamental climber for certain places. It is however rather too strong a grower to be placed in too prominent a position, and is better adapted for special uses, as for instance, as an ornamental pillar on the lawn, either creeping up an old tree trunk or telegraph pole, see Figure 1465. An additional beauty can be added if several such tree trunks, not more than thirty or forty feet apart can be connected by festoons as shown in figure 1466. The support between the trees should be heavy galvanised wire. Another good use of this Creeper is to screen objectionable features, as stables, outhouses, etc. Fig. 1467 shows such a screen separa-

FIG. 1465.—PILLAR COVERED WITH VIRGINIA CREEPER.

ting a backyard and stable from the street, with an opening to give approach to the stable. Here again a galvanised wire fence will afford a good support, or better still, the wire netting so much used for fencing. For such uses as the above, and for climbing over back porches, or over barns or coach-houses, the Virginia Creeper is one of the most satisfactory of climbers, and will succeed with very little care.

FIG. 1466.—FESTOONS OF VIRGINIA CREEPER.

For the house and especially for covering bare walls of brick or stone, the

AMPELOPSIS VEITCHII,

or Japan Ivy is the greatest favorite, throughout Southern Ontario, as far north at least as the City of Toronto, passing which it is scarcely hardy enough. This creeper has smaller leaves, and more ivy-like habit than the Virginia creeper. Once thoroughly established it makes rapid growth, and it has a remarkable habit of throwing out little tendrils furnished with tiny suckers, which cling so tightly to brick or stone that they must be torn forcibly loose and broken, to be removed. In time this vine will completely cover a wall with its beautiful foliage, which grows so closely that neither vine no wall can be seen for leaves; and in autumn this takes on the richest tints imaginable. Of late there has been a great craze for this creeper in Hamilton and Toronto, so that one need not go far to see excellent specimens of this vine.

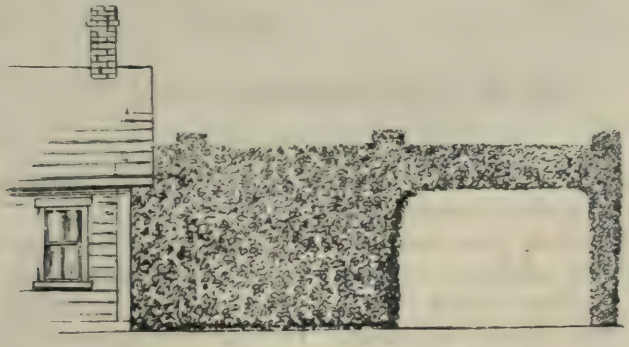

FIG 1467.—VIRGINIA CREEPER AS A SCREEN.

Another class of climbers, which is becoming exceedingly popular in Canada, is the clematis family. We have our native, viz:

CLEMATIS VIRGINIA,

samples of this climber were sent to the editor of this journal in 1893, by Mr. J. P. Cockburn; they were planted near the porch, and have grown wonderfully,

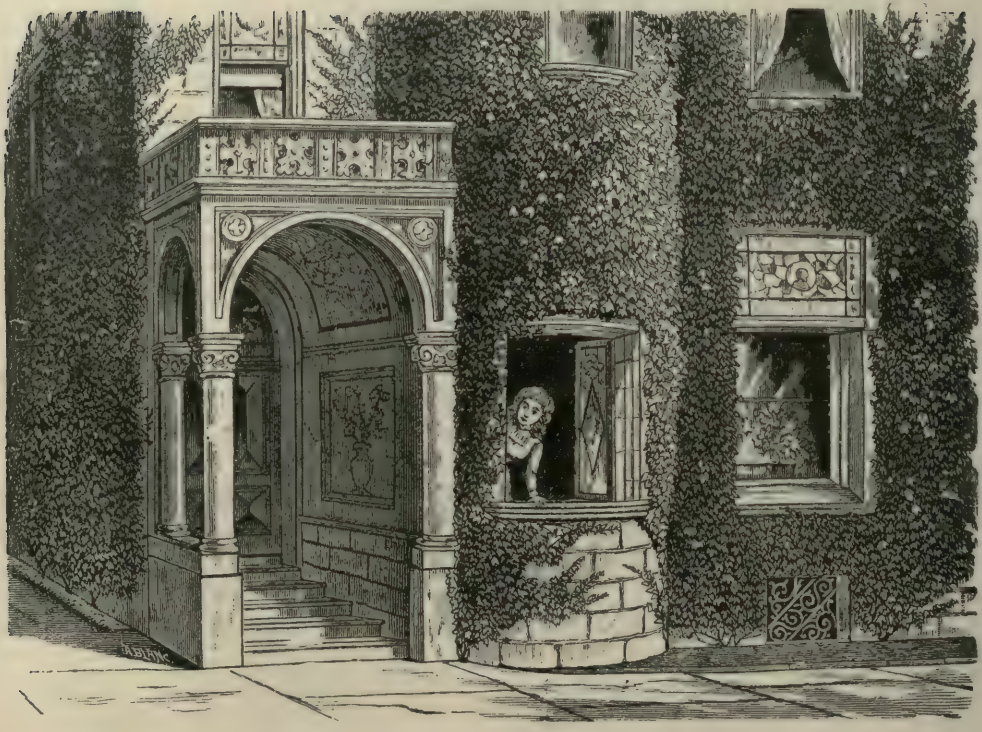

FIG. 1468.—HOUSE DECORATED WITH JAPAN IVY.

beautifully draping the base of the veranda. The vine is almost covered with small white flowers in June and July, and in August, are succeeded by long-tailed carpels which are almost equally ornamental. This must be very hardy, for in July, 1898, we found this variety under the name of *Virgin's Bower* luxuriantly covering Mr. Charles Young's back veranda, on St. Joseph's Island, Algoma.

The other cultivated varieties are too numerous to mention in this article. *C. Jackmani* is everywhere known and planted, but is almost too showy with its immense purple flowers. Like the Virginia creeper it flowers upon the young wood, which dies back considerably every year.

AKEBIA QUINATA.

This is one of the many plants introduced into England from China, but should not be mentioned here under the head of hardy climbers, for it is only in the milder parts of England that it succeeds outside. Yet in Southern Ontario it has proved itself perfectly hardy for several years past, and in our opinion is one of the prettiest climbers for its foliage and as a protection from the sun, that can be grown on a porch. It twines itself wonderfully about an upright wire, and reaches a height with us of about fifteen feet. Its flowers are small and insignificant, but the foliage is medium size, and a pretty green color,

FIG. 1469.—HOP-COVERED ARCH.

besides being very persistent, long into cold weather.

HUMULUS LUPULUS.

Some of the best plants are ignored because so common, and this may be said of the common Hop vine, which is a hardy perennial climber, of very easy culture. It is very vigorous and free growing, and aside from the use of the heads in brewing, the vine may well be employed as an ornamental climber. The accompanying illustration (Fig. 1470) from our excellent contemporary, The Garden, published at 37 Southampton St., London, England, shows a most excellent use of this common climber.

LONICERA HALLEANA.

We must not on any account forget to mention Hall's Honeysuckle, for this appears to be one of the hardiest and easiest to cultivate of this universally admired genus. The vine is strong and vigorous, and almost evergreen. The flowers are very fragrant, but not very conspicuous. It continues in bloom from June to November.

FIG. 1470.—AKEBIA QUINATA, *from an engraving in The Garden.*

PRUNING SHRUBS.

PRUNING shrubs for other purposes than to promote the formation of flower buds may be done at any time, preferably in the summer, since wounds heal better during the growing season. All that is necessary in pruning for form is to restrain the too rampant growth of some parts so as to make the bush more symmetrical. Such pruning does not imply that the specimen shall be clipped to look like the toy trees in a Noah's ark outfit—a form only too common in many city gardens. It means merely keeping the plant within bounds, but allowing it perfect freedom within those limits. Each shrub has its own peculiar beauty—an individuality which should be retained—and no pruning which destroys this beauty should be practised upon the farm at least.

Spring flowering shrubs develop flowering buds the season previous to blossoming and protect them during winter by various means, such as bud scales. Late bloomers mature their blossom buds during the season in which they flower. Early and late flowering shrubs therefore require as different treatment as beef and dairy cattle. The one rule to keep in mind for flower production is to prune after flowering. Lilac, Japan quince, flowering currant and other spring bloomers should be pruned in May or June; hydrangea, althea, burning bush and other late bloomers, in late fall or before growth starts in the spring. It is best to leave all tender late flowering shrubs until early spring, to avoid cutting out what might prove hardy canes and to then remove the winter-killed wood.

The only other pruning necessary, as a rule, is that of cutting out dead wood and an occasional centre stem. These obstruct light and air and thus favor disease. The amount of wood to remove at any one time is in each case an individual matter, depending upon the specimen, its species and its behaviour in the locality. It will not be long, as a rule, before the grower learns something of the peculiarities of the specimen and can handle it intelligently.

Non flowering shrubs may be treated the same as flowering, except in the case of evergreens, which should not be pruned in the winter. April is the best month in which to prune them, since they recover more quickly and are not exposed to the drying winds of the long winter months.—Farm & Home.

TREES, SHRUBS AND PLANTS AT THE DOMINION EXPERIMENTAL FARMS.

BY DR. WM. SAUNDERS, DIRECTOR.

FIG. 1471.—APPROACH TO DR. SAUNDERS' HOUSE.

ELEVEN years have now passed since the Experimental Farms of the Dominion of Canada were established. True to the purpose for which these useful institutions were specially designed, the officers who have been entrusted with the work have devoted their chief attention during this period to the task of demonstrating by practical experiments, how agriculture in Canada may best be advanced and the occupation of farming made more profitable. At the same time some attention has been given, not only at the Central Farm at Ottawa but also at each of the branch farms, to the testing of the hardiness and usefulness of different sorts of trees for the production of timber and the providing of shelter. The ornamental aspect of this subject has also been promoted by bringing together many different sorts of trees, shrubs and plants specially useful for decorative purposes.

In arranging the ornamental planting on the farms, a careful study has been made of the characteristics of the many species used, with the view of forming harmonious combinations and pleasing contrasts. The habit of growth, character of the foliage, its colour at different periods of the year, the appearance of the flowers and the form and colour of the fruit, have all been considered in the aim to form natural and effective combinations.

From the entrances to the grounds on the Central Farm, along the roadways leading to the several buildings, a succession of groups of trees and shrubs have been arranged with occasional individual specimens. Surprise is often expressed at the wonderful beauty and grace displayed by the many charming objects thus associated. No shears or pruning knife is allowed to interfere with the natural beauty of the specimens, but time with brief descriptions of portions of this work with illustrations of groups and objects of special interest.

In Fig. 1471 we have a view of the roadway leading to the house of Doctor Saunders.

Figure 1472 gives a view of part of a large central lawn around which the necessary buildings and residences are grouped, the large stock barn being seen in the distance. In the foreground is

FIG. 1472.—SKETCH OF THE CENTRAL LAWN.

the graceful forms with which they have been endowed are carefully preserved.

At the outset the Central Farm was void of all attractiveness save that of its beautiful situation and outlook, but by judicious planning and planting the wilderness has been made to blossom. With the view of promoting a love for the beautiful, and of extending the usefulness of this part of the work of the farms, it is my purpose if space permits to present your readers from time to

an enclosure made with evergreen hedges of spruce and arbor vitæ designed for the purpose of protecting many sorts of flowering bulbs and plants during the winter by gathering about them a deep covering of snow. Within the protecting influences of this enclosure many species can be wintered well which if grown in the open ground are very apt to be killed. The outside margins of this enclosure also form partially protected beds with different as

FIG. 1473.—WINTER SCENE.

pects, for all of which suitable plants are selected. The way the snow is collected within and about this enclosure is shown in Fig. 1473 and in Fig. 1474 a portion of the enclosed space is seen after the winter has passed and the spring flowers have opened. Such enclosures may be planned of many different forms to suit special places, but they serve best the purpose for which they are designed if the hedges are made of some evergreen growth.

On another part of this lawn the hybrid perpetual roses are grouped in beds 12 feet wide so as to permit of three rows of bushes 3 feet apart each way and a margin on either side of half this distance. A strip of grass 3 feet in width runs between each bed, thus giving a wide path of six feet. In this way the many varieties under cultivation can be conveniently examined. A part of the rose plantation is shown in Fig. 1475 with groups of evergreen and deciduous trees in the background. In a later communication the subject of hardy roses and their cultivation at Ottawa will be more fully discussed.

FIG. 1474.—A SCENE IN EARLY SPRING.

WINTER PROTECTION.

WHEREVER grape vines and blackberries and raspberry bushes need covering up to save them in winter, rose bushes are benefitted by it also. We save those vines and canes by laying them down in their rows and burying them over with earth. This also is an excellent way to protect roses. But when we grow roses closely in beds this is not always practicable. What then shall we do?

First, see to it that the ground about where the roses are growing is so well drained that no water can lodge or ice form there in winter. Secondly, in order to have good roses in June, we most prune our bushes well back in spring. As these bushes are now pretty big and have long stout canes standing up to the blast it would be well to shorten these canes to one-half or two-thirds their length, but not nearly short enough to equal spring pruning, to render them easier to handle and give us less to cover up. Then bend them over as flat to the ground as you can with the canes leaning all one way and lengthwise in the bed but their ends a little inclined to the middle, and fasten them in this way with hooked pegs or a few plaster laths laid across them and nailed or tied to pegs. They are then ready for covering up. Be careful now. Plants are seldom hurt by frost in the first of the winter; the great trouble comes after January. By covering up extra early you render your plants far more tender than they would be did you not cover till late. Have everything ready in good time, however, and before the frost takes a hold of the ground because you can do the work so much better and handier then than

later. Then about the end of November or December when winter weather has set in or is about to, fill up among your rose bushes with dry forest tree leaves which you had before then raked up into a pile, keeping them for this purpose, till the bushes are all covered over and the leaves worked in among them, and over all strew a little strawy litter to keep the leaves from blowing about, and if you have it, lay some evergreen branches, of spruce, pine, or arbor vitæ over the whole.

A heavy mulching of manure on the ground is a great protection to the roots and the crowns of roses. Straw or hay is a good enough covering but objectionable because it harbors mice. Boarding around the beds and over them is very safe, but expensive. In this case provide ample ventilation. We very often see tall rose bushes wrapped up with straw as an out door pump is wrapped about to protect it from frost. This is good if the covering is not very thick. We would advise in these cases to tie the rose bushes and some pea brush or evergreen branches all up together, and wrap the straw covering around the whole. The brush keeps the inside space open and allow free ventilation. All these high bushes should be firmly staked too, to save them from being shaken by wind in hard frosty weather, which is very injurious to them.

Where a person has only a few roses the easiest way to protect them is to cut them back a little, mulch the ground about them heavily, and place inverted barrels or dry goods boxes over them, cutting a hole in these near the top on the south side. If the rose canes have been bent down as already mentioned, before being covered by the boxes so much the better.—Gardening.

FIG. 1475.—ROSARY AND MAIN APPROACH TO SHRUBBERY.

BURLINGTON HORTICULTURAL ASSOCIATION.

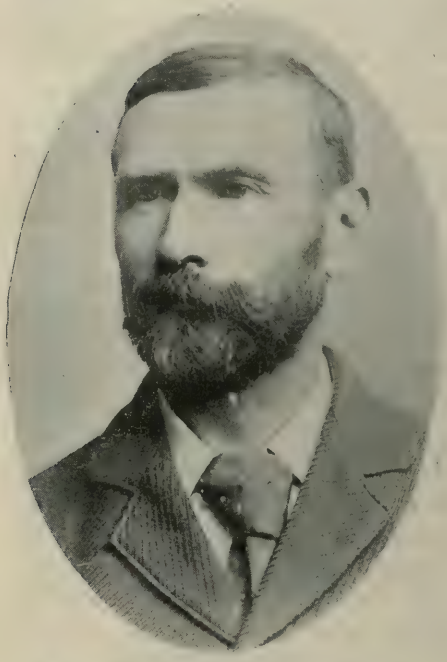

FIG. 1476.—MR. A. W. PEART, B.A., *Secretary Burlington Society.*

TO those two or three surviving constituent members of the Ontario Association, who remember its formation in 1860 with about a dozen members, it must be a matter of congratulation that the ball then set rolling has gathered such weight and influence that at the present time there are nearly forty such societies in various parts of our Province working in affiliation with us, and strengthening the hands of the parent body in obtaining the extension of the markets for fruit and in teaching our people the best methods of growing it.

One of the oldest of these affiliated societies is the one at Burlington, which was organized in March, 1889, with Mr. George E. Fisher, as President, and Mr. A. W. Peart, as Secretary. This Society has been of special use to the fruit interests of this favored district, and has led to an increased acreage of fruit, better methods of culture, and extended markets. The soil and climate of this whole region is exceptionally good, and with its excellent shipping facilities, it has become one of the leading fruit centres of Ontario. It is, therefore, no wonder that Burlington fruit took several prizes at the World's Fair in Chicago, in peaches, pears and grapes. The Society took a most laudable interest in this fruit exhibit, and without any outside help except such as was given by the Municipality, kept up constant shipments of fruit from first to last during the whole season.

The same laudable and patriotic spirit characterized this Association in its efforts in 1897, to experiment in the export of tender fruits at their individual risk of loss. The President, Mr. G. E. Fisher, was the prime mover in this work, and he was supported by Mr. Peart, Mr. Chas. Davis, and numerous other well known members of the Burlington Society. Pears, tomatoes, plums and grapes were forwarded, and on the whole the venture proved satisfactory.

During the past six years also, the Society has been making an annual exhibit at the Toronto Industrial, and has received the highest award each year. This year the exhibit consisted of two hundred and twelve plates of choice fruit.

Mr. George Fisher, the President, is one of those men who never does things by halves, and since he has turned his attention to fruit growing, has planted apple and pear trees to an extent that almost surprised even the foremost fruit growers of the Burlington district. Not satisfied with a superficial knowledge of horticulture, he sent to England for a first class microscope, and began study.

FIG. 1477.—MR. GEO. FISHER'S RESIDENCE.

ing the fungous and insect enemies of his orchard, and as a result, when a competent inspector was needed by the Department of Agriculture to search out the San Josè scale, Mr. George E. Fisher was chosen, and his work has been most thorough and painstaking.

Mr. A. W. Peart, B.A., of the University of Toronto, of 1881, is a partner with his father, Thomas Peart, on a farm of 150 acres, which is devoted to mixed farming, in the production of fruit, butter, beef, pork, grain, etc. Every year the fruit gets more attention and the grain less, until now Mr. Peart has about twenty two acres of apples, pears, plums, grapes, currants and blackberries. Indeed, it was Mr. Peart who was the

FIG. 1478.—MR. FISHER'S FRUIT HOUSE.

first in the Burlington district to plant largely of grapes, and to demonstrate

FIG. 1479.—MR. C. DAVIS' RESIDENCE.

FIG. 1480.—MR. CHAS. DAVIS.

how successfully they could be grown in the Burlington district. Mr. Peart's abilities have led to his receiving many prominent appointments in Municipal and other institutions, and latterly to his being employed each year on the staff of lecturers at Farmers' Institute.

Mr. Charles Davis is another prominent member of this Society, who has a beautiful home a little south of Burlington, on the Hamilton road. He is largely interested in fruit culture, and in the successful export of our fruits, and was one of those who contributed to make up a shipment of selected Canadian fruit for Her Majesty Queen Victoria's table, in 1896, and which brought back the following response from Lieut.-Col. Sir Arthur Bigge, Windsor Castle, the Queen's Private Secretary :—

"I am commanded by the Queen to beg you to be good enough to arrange that Her Majesty's best thanks be conveyed to those fruit growers of the neighborhood of Hamilton, Ont., who kindly offered for Her Majesty's acceptance, a beautiful consignment of their year's crop. The cases were received yesterday, by the master of the household. Their contents were in perfect condition, and some of the fruit served at Her Majesty's dinner proved excellent.

A SEEDLING APPLE.

FROM appearance the tree is 15 to 18 years old, growing in front of bush lot upon the farm of Alex. Campbell, of the township of Stanley, County of Huron, Bayfield, P.O. This tree is about 500 yards distant from the farm orchard ; has borne crops of fruit for many years, and always of the same uniform size, shape and cleanliness ; this year the crop is about three barrels, and every specimen is free from spot or insect, which goes to illustrate the advantage of a strong tree feeding upon virgin soil. The owner estimates its value so highly that he has grafted several trees in the home orchard from it, and it will be interesting to know the results of this work. He names it locally as "Campbell's Red." Evidently a Fameuse seedling, bearing many points of resemblance, stem about same with calyx resembling Wealthy ; color which covers the fruit completely, is brighter, livelier than Fameuse ; will keep with Fameuse, flesh white with crimsom streaks, firm and juicy, possessing more tart than parent and would ship well, good.

In your excellent description of "Fruit at the Industrial," I was struck with the composition of the twenty variety of pears which took first prize.

That collection contains varieties which point very low in commercial value, such as Seckel, Lawrence, Nelis, Malines especially. I might also add Easter Beurré, as for such a collection it is too variable to recommend generally. Souvenir also comes into the same list and cannot be classed as generally profitable. Then the Flemish Beauty has lost some points of late years as a generally profitable pear. The collection

to my mind lacks also in not having Clairgeau especially, and I might add Boussock. Of course, not having seen the display, I am not in a position to compare with other competing collections, and I readily recognise the difficulty any grower has in putting together fine specimens in so many kinds. Would it not be more profitable to do away with so large a collection? Ten varieties would contain such a collection as could be recommended a planter to adopt, and in this way exhibitions would be educative to a more practical degree. We have many kinds that are so high in flavor and desirable for the amateur's dessert table, that we do not wish to discard them; but markets and their demands must be considered, as we must have dollars and cents. If we must have large collections at exhibitions, why not draw a line between these and such collections as we can recommend for profit to the general planter?

For a first of winter kind, I make more money out of Drouard than almost any, after Anjou and Clairgeau are gone. How is it with others? Drouard with me is a strong grower, regular bearer, fruit good enough in flavor for market, and it has size and good form to attract the buyer.

We can consciously drop a sigh to think that the markets will not generally give a price that will make it pay to grow Seckel, Lawrence, Nelis and Malines. But we must bow to the inevitable and produce what the markets demand, for there is no sentiment there for finest flavor minus quantity! Let us strive to produce Clairgeau in size and Seckel in flavor, and see if *market demand* will smile upon us and reward the effort.

ALEX. MCD. ALLAN.

Goderich.

SPRAYING FOR THE CURL-LEAF OF THE PEACH.

IN nearly all of the Northern States the crop of 1898 was greatly reduced by the work of the curl leaf, except in the few orchards where a proper use was made of fungicides for its prevention. Many persons waited until the buds had commenced to swell, and report a partial loss of the crop, but where the application was made early in the spring, and was so thorough as to soak the buds and branches, little or no "curl" appeared, and a crop was secure. Even in the case of varieties which, when left unsprayed, were so severely injured that all of the fruit, as well as the foliage, dropped from the trees; good results can be secured from the use of a copper sulphate, copperas, Bordeaux mixture or lye, but for a number of years a solution of copper sulphate at the rate of one pound to from fifteen to twenty-five gallons of water has given the best results. The treatment may be given in the fall after the leaves have dropped from the trees, or at any time before the first of April for the northern states; after that date the benefits will be less marked. The past season, applications of Bordeaux mixture after the blossoms dropped from the trees, had little, if any, beneficial effect, in lessening the injury from curl leaf, although of considerable value in preventing the scab and spot disease, as well as the attack of brown rot, but in other seasons when the disease has not appeared until several days after the leaves have opened, a marked benefit has been noted. L. R. TAFT.

Agric'l Col., Mich., Oct. 25, 1898.

MR. S. D. WILLARD'S ORCHARD.

MRS. W. W. STEVENS, before the Indiana Horticultural Convention, described her visit to the home of Mr. S. D. Willard, of Geneva, N. Y., and spoke of his Kieffer pear orchard. The trees are kept very small and are headed in at about three feet. Each year's growth is cut back to two inches The entire crop can thus be gathered from the ground. Only the best fruit is raised. After the pears have set the crop is thinned so as to produce specimens of large size and fine quality. These small trees have several advantages. They are not affected by winds, the fruit is easily gathered, and more trees can be grown on a certain amount of space.

The trees live long and are very profitable. In one orchard they are 16 x 16 feet, while in another they are 8 x 16 feet, and the results are entirely satisfactory. The ground is cultivated shallow and highly fed. No barnyard manure is allowed, as Mr. Willard thinks it is conducive to fungous diseases. Of Japan plums, Mr. Willard thinks Burbank can hardly be improved upon. The trees headed low and are kept narrow from side to side. Black Diamond plum is a good bearer and considered a desirable variety.

In addition to pears and plums, Mr. Willard grows large quantities of apples, cherries, gooseberries, currants, grapes, etc. His orchard is kept in the finest possible condition. Every bit of space is utilized. The ground is highly fertilized. Contrary to the belief of many, this kind of management pays. Along one side of the orchard was a row of sunflowers which Mr. Willard explained was to furnish food for the fowls, which were raised in connection with fruit, for he stated, insect pests are likely to be less troublesome where there are chickens. The poultry also pays a profit in the production of eggs.

Mr. Willard sells direct to the consumer in original packages. He puts up two grades of fruit. No. 1 and No. 2. Poor grades are sold to canners or are put upon the market upon merit and without brand. Nothing but the best is packed.

Orchards and small fruits are cultivated perfectly clean. The ground is kept level and well stirred. Of commercial fertilizers, hardwood ashes are considered best, but are usually so scarce that other kinds have to be substituted. Mr. Willard's practice briefly stated is: Plant carefully, prune severely, and feed liberally. In the discussion following this paper the merits of the Kieffer pear were pretty thoroughly discussed. Unless properly handled it is not at all satisfactory, being hard, gritty, and almost tasteless. About the first of October gather from the trees, place in a cool, dark room, and allow to ripen three or four weeks, covering with old carpet or some similar material. With such treatment this pear sells readily and is very satisfactory. It was the sense of the convention that Kieffer pears could profitably be planted in Indiana. At least they are very remunerative at present. So many have been set during recent years that there is a possible danger of over-production —Allegan Gazette.

THE AGE OF BEARING TREES.

ONE of the greatest disappointments to the one not conversant with the subject, and who wishes to plant fruit trees, is to find that he cannot begin plucking fruit from the trees the year after he plants them. I have witnessed this disappointment in so many that I am quite prepared for it when the question is asked of me. It happened recently that a lady asked me how long it would take an apple tree to bear which she had just planted. The tree appeared to be a four year-old one, and was about seven feet high and fairly headed. I answered, "It will be about ten years." She thought this a dreadful long while to wait, but the only consolation I could give her was that she would possibly see fruit on it in five years, but it would be ten before it would bear what might be termed a crop. I am satisfied that what I said was right. There is but little fruit to be looked for from the apple and the pear until ten years from the time of planting has gone by. I have in mind some pear trees planted by me seventeen years ago, and, though fruit has been gathered from them every year since they were planted, they have not yet reached perfection of growth. I think about two bushels per tree would be about what they bore this year. I find it always consoles amateurs to tell them that some fruit may be expected every year from pears.

With apples the fruiting is rather slower. There need be none whatever looked for for two or three years after a four-year-old tree has been set out, and the full bearing period will be as much behind it. The cherry is much like the pear. Some fruit appears to cheer the heart of the owner as soon as the tree is planted, and there is a continuance of it every year, it being a fruit tree that rarely misses a crop. The plum stands between the pear and the apple. It does not start bearing at once, but in favorable situations, where good but not rampant growth is made, a few years bring along the flowers and fruit. Peach trees will often produce flowers from a shoot but one year old from the bud, and it is one of the earliest bearing of all tree fruits. It is a tree which should be set out by all impatient parties, as it brings them something and interests them while waiting for the slower ones to come along.

Quinces will sometimes bear in four or five years, at other times they will stand still for several years, and take nearly ten before bearing but a few fruit. Whenever I find one who asks my opinion on the length of time he will have to wait, if he be of the despondent kind I recommend that some pears and peaches be planted. And besides telling this, I see that the Bartlett is on the pear list, as it bears at once, every year a good crop and cannot be excelled for quality And besides telling persons just how long they must wait for their trees to bear, it is well that they should understand that good cultivation pays. A well-fed and well-tended fruit tree may be a little slower in fruiting than a starved one, but in the end it will be a better tree and give finer fruit.—Practical Farmer.

THINNING TO INCREASE SIZE.

THE necessity of thinning the fruit is a work we shall have to recognize in the future. The benefits have been brought to my notice in many places this year. In September I was in Ontario in one of the best plum-growing sections, and saw an orchard of four hundred trees, each tree of which yielded ten baskets of Lombard plums, or four thousand baskets in all, which sold at twenty-five cents, making a gross return of $1,000 for these 400 trees. I saw another orchard, not five miles away, that carried probably as large a number of baskets, but I am sure they would not realize more than fifty per cent of the gross return of the first. The high prices scored by the first lot may be attributed to the fact that they were thinned, and the second was not. The Lombard is one of those trees which will practically kill itself by overbearing if it is not thinned. The fruit will, under these conditions, become small, and very poorly colored, so that the smaller price for the larger number of baskets will not equal in gross return that secured from the smaller quantity of better quality obtained by thinning. At the farm I have tried this experiment on some varieties of American plums. These are very prolific sorts; if allowed to bear to their full extent, will in a few years destroy themselves. In the case of the Weaver plum, two trees which were not thinned for three years died at the end of that period, and two other trees which were thinned each year, are in good health and give fair returns each year. It is, therefore, not only possible by thinning to increase the quality of the fruit but to keep your trees in health.—Report Quebec Pomological Society.

FRUIT NOTES.

ROAD dust thrown over the trees in which the slimy scales appear, will destroy them. They breathe through pores in their bodies and the dust closes these up and suffocates them.

Clean cultivation is the great safeguard against fungus diseases and insect pests. These enemies are cowardly, they always attack the weak and unprotected plants first. Look for them closely and apply remedies for them at once.

If you desire to hasten the maturity of any garden crop, use wood ashes liberally. On most farms enough ashes can be saved during the year to give the entire garden a good coat. We do not place as high a value upon ashes as we should.

Such luxuries as small fruits of all kinds out to be indulged in liberally by every farmer's family, but such is not the case in too many instances. It isn't too late to make a start in this direction this spring, if you have neglected it in the past.

For the currant worm no remedy is safer or more easily applied than white hellebore. Dissolve an ounce of the powder in two gallons of water and apply with a fine sprinkler or brush broom. A sprayer is the best thing made for this purpose. The worm first appears on the lower branches about the time the fruit is formed.—Main Farmer.

PLUMBAGO CAPENSIS. *(Leadwort.)*

Fig. 1481.—

THIS Shrub belongs to the Natural Order *Plumbaginaceae* which comprises about eight genera and nearly three hundred species. They are mostly maritime plants, though some are found on mountains. They are distinguished from all other monopetalous orders by their plaited calyx, and solitary ovule, suspended from the apex of a cord which

arises from the base of a one-celled ovary. Most of the plants of this order are acrid and caustic in the highest degree. The roots of one, *Plumbago Europœa*, used to be employed by beggars to raise ulcers upon their bodies to excite pity, and another, *P. Scandens*, is so very acrid that in the island of St. Do-

seà lavender or *marsh rosemary*. The root of *Statice Caroliniana* is one of the most powerful astringents in the vegetable materia medica, while the bruised fresh bark of the roots of Plumbago Zeylanica acts as a splendid blistering agent, or to speak more elegantly it is a vesicatory or vesicant.

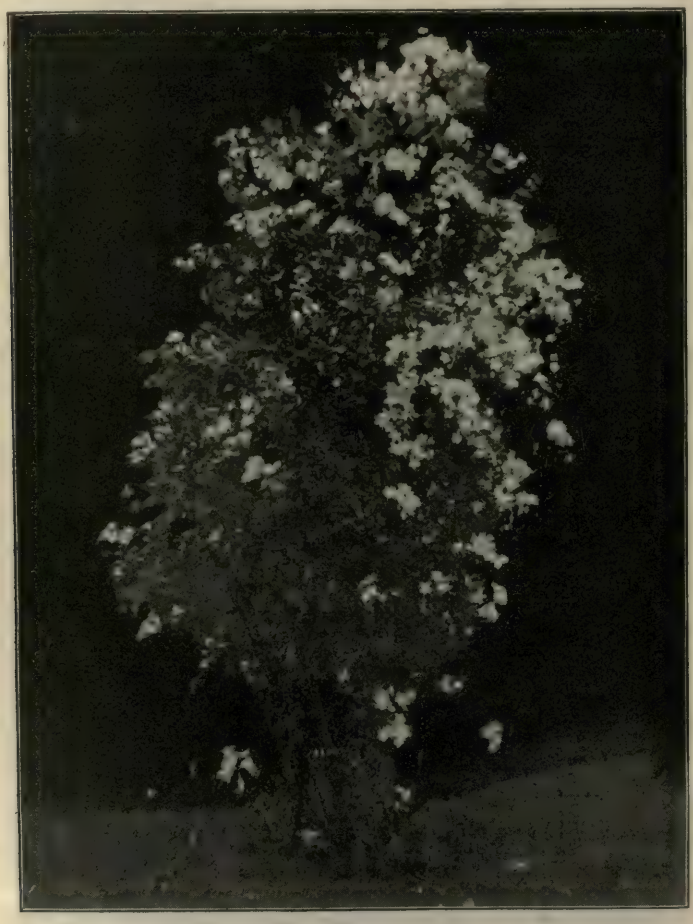

FIG. 1482.—

mingo it is called, on this account, *herbe du diable*, or the devil's herb.

Only one member of this family figures in North American botany, viz, *Statice Limonium* and its variety, *Staitce Carolinana*, which are found along the sea coast in salt marshes, and is called

Before I proceed to speak particularly of the member of the family whose name heads this paragraph I might observe that the reason the order is called the *Leadwort* family is not because the color of the flower of some of the members of the typical genus, *Plumbago*, re-

minds one of the appearance of fresh cut lead, but because *P. Europæa*, already referred to as a pity-producer for European beggars, produces also the substance called Plumbagine, and farther, a peculiar fat which gives to the skin a leaden color.

As garden plants nearly the whole of the order is much prized for beauty. The well known Sea-pink or Thrift found on the sea coasts of England, and used there largely as an edging for flower beds, is a member of this family. Its botanic name is *Armeria vulgaris*.

Now, after having spoken of some of the properties of the family at large, I want to speak a word for *Plumbago Capensis* as a very desirable plant for house, greenhouse or garden cultivation. In habit it may be said to be half shrubby. It is practically a perpetual bloomer. Its flowers are produced in large clusters of a beautiful light blue color—a color not possessed by any other plant with which I am acquainted, and while it is not so hardy as to stand the Canadian winter it may be so managed that it will be an object of great beauty on the lawn or in the herbaceous border in late fall when we have such a scarcity of flowering shrubs.

The illustrations accompanying this article were taken from plants on my lawn late in October of the present year, and the plant in a pot, Fig. No. 1481, was photographed at the same time, three weeks after having been dug up out of the flower border where they had been planted out in June.

Figs. 1482 and 1483 represent shrubs over 6 feet high. No. 1481 was a plant which grew all last winter in the centre bed of my conservatory along with begonias, cytisus, abutilons cannas, poinsettias, and a Bouganvilleas, etc., all in a blaze of color; yet the plumbago commanded attention even in such gorgeous company, by the number and peculiar delicacy of its graceful blossoms. Another plant grew on the back wall of the greenhouse reaching the height of 8 feet, and bloomed continuously through the winter. No. 1482 was cut back a little and lifted and planted on the lawn in early June, and had assumed the proportions and bloom as shown in September, blooming through October until two nights of frost at 22° robbed it of its glory. I noticed, however, in spite of this ordeal, a few mild days succeeding, it actually ventured to unfold a few more of its delicate blossoms. Fig. 1483 represents a plant grown for two years in a pot and planted out on the lawn at the same time as the other, and after being allowed to pass through the frost referred to above, was potted and is now making fresh growth which in a week or two will again delight us with its bloom. It is easily grown. All it requires is good friable loam enriched with decayed manure. As it soon fills the pots with roots, watering must be carefully attended to. Frequent syringing with water is necessary as the red spider seems to consider its leaves a special delicacy, and is the greatest enemy it has. It is easily propagated from cuttings; half-ripened wood in sand soon emitting roots. It grows rapidly and is one of my most satisfactory greenhouse shrubs. If planted out in early summer and lifted before frost injures it, it never fails to give a profusion of bloom for many weeks.

If the flowering side-shoots are cut back when the flowers fade, the supply of fresh flowering wood will be kept up.

I trust many of the readers of the HORTICULTURIST, especially those who have greenhouses, will get a plant of Plumbago Capensis, and I am sure they will be delighted with it.

FIG. 1483.—

Plumbago larpentæ and *P. rosea* and its variety coccinea are also catalogued by nurserymen. The first of these is of a dwarf habit, the branches being nearly prostrate with flowers of a deep blue, and the other *rosea* and its variety is an upright grower though not at all in habit like *Capensis*. Its brick-red flowers are borne in airy spikes at the end of the shoots and is very useful as a winter bloomer.

A. ALEXANDER.

Hamilton, November, 1898.

ROSES FOR THE AMATEUR.

SIR,—Lest some of the readers of the HORTICULTURIST north of the latitude of Hamilton might be induced to buy and plant the list of roses given by our friend Webster without a necessary provision for the season of disappointment and sorrow which is certain to follow, I would advisingly recommend them while purchasing the roses to purchase at the same time an ample supply of crape and other necessary mourning goods.

These latter goods will be needed, for their day of sorrow will surely come. I am about forty miles north of the latitude of Hamilton, and such roses as La France, Margaret Dickson, Pierre Notting and even Ulrich Brunner I would not think of calling hardy.

In his list of 12 hardy roses Mr. Webster again includes La France and again in his list of hybrid teas. In his list of 20 varieties Mr. Webster does not include the old rose, Jules Margotten, yet it is quite as hardy as many that he does include, with finer foliage, a stronger grower and heavier bloomer than any one of them.

If it is bloom that is wanted I do not think I would recommend twenty varieties to anybody. I certainly should not recommend twelve dark ones and include in them Pierre Notting, Louis Van Houtte and Abel Carrier and leave our Gen. Jacqueminot. But as it is too late to purchase this fall, and a number of correspondents have asked for lists by letter, I will endeavor before the spring season comes to send you for publication a guilt edged list suitable for latitudes from Guelph northward. We cannot all live in such favored latitudes as Hamilton, otherwise I would like to revel in varieties that I dare not touch here, having due regard for the season of disappointment sure to follow an investment in and trial o them.

T. H. RACE.

Mitchell.

SPRAYING A SUCCESS IN QUEBEC.

I WISH to say that I am a complete convert to the idea that spraying will clear us of the fungus. The first year I applied it was three years ago, and I made the test in this way. I left two or three trees in each orchard, which had no application at all of the Bordeaux mixture. The difference between the fruit on the trees not sprayed and the others were very marked. The fruit on the unsprayed trees was unsalable and miserable. Not only that, but the leaves were badly attacked by the insects, and the trees made very little growth. Last season the fruit generally was better than it has been for some years. Out of a crop of five hundred barrels, I do not believe I had one barrel of spotted fruit. The St. Lawrence were the worst spotted; My Fameuse were very clear. I have in one of my orchards about twenty trees of the St. Lawrence which are now twenty years old. They were planted too close together, so that the branches intersect, and it is impossible to get round the trees, and you can only spray from two sides. The spraying was carefully done, but the Bordeaux mixture never fell on the leaves between the trees at all, and the result was when we began to pick the St. Lawrence they were splendid looking from the outside, but when we opened out the branches were they were intersected, the fruit was absolutely unfit for eating or selling, and almost altogether covered with the fungus. My man was very much struck with that, and became quite convinced of the good effect of spraying. He had previously been a little doubtful, but was now quite convinced. It was one of the clearest evidences that the Bordeaux mixture, well applied, with a good pump, and applied at least three times, will give us good fruit.—Report Pomological Society of Quebec.

HOUSE AND BEDDING PLANTS.

FIG. 1484.—A Window Box.

SUCCESS with house plants, like success with anything else, does not depend altogether on the immediate surroundings, but rather if I may use the term, upon the stick-to-itiveness of the person. The successful grower of plants like the successful student, mechanic, or business man, is observant, careful, and methodical, always devoting his or her attention to the subject, never losing sight of the high standard to be attained.

Flowers have an ennobling and elevating influence; their influence is not only elevating but instructive, and every home should have a window set apart for their cultivation. This window should be the largest in the house, and facing the sunny side, and with ample ventilation provided.

It must be confessed that there is one great drawback to growing plants in the house, and that is the hot and dry atmosphere in our houses, and unless this is counterbalanced in some way plant life will be of short duration. I know of no better way than that practiced by a friend of mine this last season; his method is as follows: His plant table has a piece about one inch square nailed on the outside edge; on the table and over this, zinc has been placed, so that it makes as it were a large shallow pan; in one corner he has a small pipe inserted to carry away any water that may run from the pots after watering; the pipe has a tap on the end so that there is no danger from water dropping on the floor. On the table he placed about one inch of fine gravel, which has a tendency to hold the moisture, and its slow evaporation moderates the atmosphere to a certain extent.

In flower culture it is usually the cheap things that are good; strong healthy plants, increasing easily and rapidly by cuttings or from seed, make

is possible for the seed or plant to be sold cheap, hence the beginner should always commence with these, and as experience warrants gradually add those plants requiring more careful handling.

Some people wonder why it is that they have such poor luck, and why it is that plants never do well for them; you often hear them condemn the florist as a down-right humbug; but do not be too hard on the poor florist. I am one myself, and how hard it is to be blamed for that which we are in no way accountable. While we must admit that there are unprincipled men in the profession, namely nine times out of a hundred the florist will not overdraw his description or wilfully mislead you in his instructions. Did you ever stop to think what the plants have been subjected to in the change from our greenhouses to your dry rooms? In our greenhouses the temperature is always even, and the atmosphere moist; we give the whole of our time and attention to the plants under our care, and use every means known to art and skill to assist nature in developing its glorious beauties.

A large number of failures are due either to the want of proper attention in watering or through being kept in a room that is too close and warm. Nearly all plants do better if kept in a cool room, no matter how cool so long that it does not freeze; and just here let me suggest to you that it will not pay you to attempt to raise house plants, either from seeds or by cuttings while they can be had at so small a cost. Buy them just as they are ready to bloom, then you will have all the benefit without the trouble and at so small a cost that your windows will always be a source of pleasure to yourself and an admiration to your friends.

Decorative Plants.

In house plants there is nothing that lends elegance to its surroundings or more completely adds the finishing touches to a drawing room or parlor than the Palm. The ease with which they are kept has attracted increased attention every year, until now we handle thousands annually. Where people have not succeeded we find that it is invariably from the want of not giving their palm sufficient water;—we must remember that palms are a moisture loving plant, and we must try by artificial means to reproduce nature or at least to supply nature's requirements. While as I say that palms are a moisture loving plant, we find that there is no house plant that will give more satisfaction or last so long as a Kentia a Latania, a Phoenix or a Coco Palm. With a few exceptions Ferns do not give satisfaction as house plants but there is nothing more suitable for a drawing room or a dinner table than a fern pan. This is an earthen pot about 3 inches deep, filled with a variety of hardy ferns; they are usually fitted into a cover of some design to suit the customers' taste. It must not be imagined that this is going to last a whole season, for it will not but you must look at it in the light that it does not cost any more than a vase of cut flowers would for one single occasion, and it will last for several weeks, and can be refilled at a very nominal cost. The rubber plant is one that can be recommended to thrive and do well where all others fail—a splendid house plant for winter and one of the best we have for lawn decoration in summer. There are a number of Draceanas that make admirable house plants; their rich markings add a tropical elegance and variety to their surroundings.

The Pandanus Veitchii is another very attractive variegated plant that can be highly recommended; easy of cultivation, graceful in appearance, it is one of the best we have.

I might go on and enumerate a large number of decorative plants, but I do not consider it necessary. In the care of what decorative plants you have, let me impress upon you the importance of care and judgment in watering, as the all important secret in growing plants. It is hard to learn and harder to teach; it is an art in itself. You must be in touch with your subject, then by diligent practice and close observation it becomes as it were a second nature. See that the drainage is perfect. Sponging off the foliage once in a while is a benefit, but do not make the mistake of putting them out in the rain to get a good wash; while it may not hurt them in the summer, it is death to them in cold weather. Decorative plants require all the light you can give them, but not the direct sunlight, it is apt to burn and disfigure them.

Flowering Plants.

Azaleas are amongst the most easily managed flowering plants we have; they are imported from Belgium, and are now sold at very nominal prices. Considering their beauty and the length of flowering season, they should be in every collection. Great care should be taken to see that they are thoroughly watered, for on this depends your success or failure. Placed in a moderately cool room they will last in bloom from six to ten weeks.

The Chinese Primrose is perhaps the most popular and altogether the most satisfactory of all the flowering house plants we grow, beginning to bloom as it does in early fall and continuing all winter. In its freedom it has few equals and no superiors; its only requirements is a cool light room and ordinary treatment. Cyclamen, with the wonderful improvement that has been made within the last few years, has brought forth such noteworthy praise that it is considered as indispensable to every collection. It is raised from seed which give by all odds the best results. It can be grown on from year to year; but I do not recommend that, as it will seldom do as well after the first year. In its early stages it requires the skill of an expert, so that here again I would recommend that you buy the plants just as they are coming into bloom, which will be in November. If they have been properly grown they will give you a profusion of bloom nearly all winter.

There is perhaps no class of plants that give more universal satisfaction than the Begonia. Whether it be flowering or ornamental, the tuberous rooted begonia with its enormous and gorgeous flowers, its wide range of colour, commends itself to all. The new flowering varieties which have been introduced within the last few years are such an acquisition and improvement over the older ones that no lover of flowers can afford to be without them; their ease of culture, and profuse blooming qualities, are found in no other class of plants. They require a light rich fibrous soil, firm potting and a sunny situation.

Now I have mentioned a few of the standard commercial plants, but the list that may be selected from is almost unlimited, e g.—Fuchsia, Heliotrope, Hydrangea, Cineraria, etc., all of which do equally as well and give good satisfaction. Then if you so desire you may have a succession of the softer growing plants, such as Ageratum, Mignonette, Petunia, Wallflower, Candytuft, Sweet Alyssum, etc. These can all be raised from seed in late autumn or early winter

and will give you a nice variety with little or no expense.

BULBS.

The cultivation and sale of bulbs has reached enormous proportions. With their ease of culture, showy effect and small cost, they are prime favorites. They should be potted up as soon as received in the fall, placed outside in some sheltered position, and covered first with some leaves, sawdust or some other material that will not adhere to the soil in the pot, then cover with six inches of soil; but before covering at all, give a thorough watering. This is all the water they will require until you bring them in, so do not make the mistake of trying to force Dutch bulbs before the middle of January, or the further mistake of trying to force them before they have made any roots, or rather filled their pots with roots. When potted up in October or November and covered as directed they will have filled their pots with roots by the middle of December and may then be brought into a cool cellar, and a few at a time brought into a light, warm room so as to have a succession. Roman Hyacinths and Paper White Narcissus only may be forced before Christmas.

It is claimed by some authorities that to have the best success with bulbs they should be left outside until thoroughly frozen, particularly so with Tulips and Lily of the Valley. This I can assure you is not at all necessary, as annually we force tens of thousands that are never subjected to the freezing considered so necessary, and I must say that the quality is equal to any that I have ever seen.

W. GAMMAGE.

London.

A CHOICE LIST FOR WINTER BLOOMING.

I WILL name 25 plants that stand first on my list for their winter blooming qualities; and the amateur, who is undecided what to select from the attractive pages of the catalogues, will find none better. They are not the latest novelties, I know, but they are better than some of the newer kinds.

Geraniums: Bruant, red; La Favorite, white; Centaure, lovely pink; M. Caro, called lilac and a free bloomer; Gilded Gold, orange-scarlet.

Abutilons: rosaeflorum, a lovely rose color, veined with dark pink; Boule de Niege, pure white; Golden Bells, bright yellow; Crusader, crimson.

Carnations: Silver Spray, pure white; Chester Pride, white flaked with red; Sunrise, yellow flaked with red; Tidal Wave, deep pink. There are many more carnations that are deserving of mention, but these are excellent bloomers.

Begonias: Rubra, bright scarlet; Paul Bruant, light pink.

Roses: Meteor, dark red; Clothide Loupert, white with pink centre.

Also a plant each of Primula obconica, purple heliotrope, Manettia vine, Plumbago capensis, a pink and white petunia, a scarlet and white verbena and a Linum trigynum,

I presume everyone knows how to care for the geranium. The abutilon, heliotrope, Manettia vine, carnation, plumbago, petunia, verbena and Linum trigynum will do well in the soil that suits the geranium. Perhaps Madettia vine will do better with more leaf mold

in the soil than is given to the others. I find that Primula obconica, also, likes a liberal quantity of leaf mold in the soil and is a very thirsty little plant. Carnations should be planted out in the garden through the summer, all buds removed until they are lifted in September and given a sunny window; shower often.

Among the petunias, I prefer the double to the single varieties. Roses are more difficult to manage, but the varieties named are more easily grown than most roses. Loam enriched with well-rotted manure, with a little yellow clay added, makes a good soil for them. Do not use a bit of leaf mold. To grow roses successfully, one must sprinkle thoroughly every day or they will surely be troubled with the red spider. Begonias thrive best in a soil consisting mostly of leaf mold; they grow well in an east window, and do not care for much sun.

If the amateur will profit by these hints and select plants like the ones named, I think she will be delighted with the results. These may all be purchased of some reliable florist for a small sum; and if her pocketbook is in the condition that mine usually is, thin, very thin, she will do much better to choose from this list than to spend the modest allowance for a few costly novelties. It would be well to add a few bulbs in the fall, as they are both cheap and good —Farm and Home.

POINTERS ABOUT WINTER HOUSE PLANTS.

SEVERAL inquirers have asked, recently, for a little advice about Winter house plants. It is not difficult to make a fair show, even under restricted circumstances, but amateur gardeners often err in being too ambitious for their space and location. All plants that make a brave show in the greenhouse cannot be depended upon for equal results in the house. One window cannot be expected to accommodate plants of widely different classes. If the only available location is light, but practically sunless, do not expect a profusion of flowers. In such a situation, foliage plants only should be attempted. Carnations, violets and primroses should not be expected to flourish in a very warm room. A house in which there is neither steam heat nor gas is far more likely to give good results with ordinary house plants than one possessing these advantages.

Bulbous Plants.

Every one likes Winter-blooming bulbs, and though their season of bloom is not long, they are very attractive, easily managed, free from insects or disease, and inexpensive. It is now too late to pot bulbs with the idea of having them in flower by the holidays, or to pot Bermuda lilies, which should have been making roots for two months past; but tulips, hyacinths and crocuses will give blooms for the latter part of the Winter.

"What general planting directions would you give for bulbs?" I asked a New York florist.

"A mixture of garden loam, sand, and well-rotted cow manure is a good compost for bulbs. Set hyacinth bulbs about half their depth in the soil, but tulips should be covered one to two inches. For single bulbs of ordinary size, use a four-inch pot, or put four bulbs in a

seven-inch pot. Water well when potted, and put in a cool, dark place. Keep them there until they have made abundant roots, which will be in four to six weeks. To grow the Bermuda lilies, select large, heavy bulbs; put about three inches of compost on the top of drainage crocks, in a seven-inch flower pot; place the bulb on this, and cover with soil, not filling the pot right up to the top."

"Why shouldn't you fill the pot right to the top?"

"Because the lily will form adventitious roots, like that Mexican June corn, and you want to add a mulch for their benefit."

Bulbs Without Soil.

"Is it possible to grow all these different bulbs in water?"

"Hyacinths, and the Narcissus, commonly known as the Chinese sacred lily, are the only ones commonly grown in water. The Narcissus referred to has been so widely advertised that it is hardly necessary to describe its culture. The hyacinths are put in narrow glasses made for the purpose, which have a wider cup at the top, to hold the bulb. It is well to place the bulb in slightly damped sand for a few days before putting in the glass. The bottom of the bulb should just touch the water. Until the bulb has made roots about one inch long, the glass should be kept in a dark place."

"Is ordinary clear glass used for these bulbs?"

"No, opaque glass is preferable, because the roots should be in the dark. The water may be changed from time to time, about two drops of ammonia being added to the water in each glass. A lump of charcoal will aid in keeping the water sweet."

Varieties of Hyacinths.

"What varieties of tulips and hyacinths would you advise for house culture?"

"Single varieties are, as a rule, more satisfactory than the doubles. The small Roman hyacinths are the earliest to bloom. They should be planted in earth, three bulbs in a five-inch pot. They may be obtained in white, red or blue, and are in bloom long before the large Dutch sorts. Among Dutch hyacinths, a good selection of singles is the following: Blue—Charles Dickens, Czar Peter, King of the Blues, and La Peyrouse; white—La Grandesse, Mme. Van der Hoop, Grandeur a Merveille, and Baron Von Thuyll; yellow—Ida, William III., Heroine; dark red — Pelissier; pink, Gertrude, Lord Macaulay, Norma, Fabiola. One may buy unnamed sorts, in the different colors, cheaper than named sorts, and they are excellent for bedding; but I think the selected ones are safer for window use."

Tulips and Their Varieties.

"The earliest tulips noted outside are small red or white ones; are they suitable for the house?"

"They are the Duc Van Thol varieties, which are very early, hence are forced by florists who want tulips around the holidays. They are small and short-stemmed when brought into bloom about the holidays, and while it is well enough to have a few of them, there are better sorts."

"What varieties would you recommend for the house?"

"Singles by preference; a good selection would include Artus, bright scarlet; Chrysolosa, golden yellow; Keizerkroon, red and yellow; Cottage Maid, pink and white; Duchesse de Parma, red edged with yellow; Joost Van Vondel, red and white."

Other Bulbs.

"What other bulbs would be suitable for the house?"

"Narcissus of the Polyanthus section, especially the Paper White; the Trumpet daffodil and jonquil; Freesias, Ixias, Amaryllis, Star of Bethlehem, Siberian squill, and Glory-of-the-Snow (Chionodoxa Lucillæ). Several varieties of Oxalis, described as bulbous, though really tuberous plants, are excellent for Winter."

"How are they treated?"

"They should be potted, as early as possible, in sandy loam, requiring good drainage. Put four or five of the tubers in a five-inch pot, as they are quite small."

Flowering Plants.

"How are violets, roses and carnations for Winter house plants?"

"I wouldn't recommend any one of the three in an ordinary room. I know that people sometimes report success with them, but the chances are against it. Violets might be tried in a room with little heat, simply kept free from frost, running about 40 to 45 degrees at night; but they would not stand an ordinary living room. Carnations will not stand dry heat, neither are such conditions suited to roses."

"What flowering plants would you recommend?"

"Cyclamens, azaleas, begonias and Chinese primroses are all satisfactory. The begonias are so cheap, handsome, and easily managed that they are sure to give satisfaction. The Semperflorens varieties are all excellent for the house, free Winter bloomers. Erfordia, with clusters of rosy salmon flowers, gives good satisfaction in the house during the Winter, and outside in the Summer. Begonia Vernon and its varieties are similarly useful."

"What other types of begonias would you recommend?"

"The Rex or painted-leaf sorts. They give a handsome effect among foliage plants."

Plants with Ornamental Fruit.

"The Otaheite orange is recommended for the house, is it not?"

"Yes, it is a very fine thing showing fruit and flowers at all seasons. While thriving in a moderate temperature, it doesn't like a sudden chill or excess of water. I have seen specimens which were allowed to stay outside during a cold Fall rain, being soaked and chilled at the same time, and the result was disastrous."

"What other fruiting plants would you recommend?"

"The old Jerusalem cherry (Solanum Pseudo-Capsicum) which may be grown from seed outside, and lifted in the Fall. It has bright orange-scarlet fruit. Ardisia crenulata, with bunches of bright red berries, and deep green, laurel-like leaves, is an excellent house plant."

Foliage Plants.

Lists of palms and ferns suitable for the house have been given several times by The R. N. Y.; these classes include the best selection of foliage plants. The familiar Abutilon, known to many amateurs as Flowering maple, may be included here; the white-edged variety, Souvenir de Bonn, is very good. Coleus is often tried in the house, but it has an unpleasant habit of dropping its leaves when chilled, and becomes very stalky and unhappy-looking if in a room where the temperature varies greatly. For a northern exposure, with poor light, Aspidistra and Bowstring hemp are the best foliage plants.—Rural New Yorker.

PRINCE EDWARD ISLAND FRUIT GROWERS.

LAST month we noted the formation of a Fruit Growers' Association in P. E. Island, which had in view the furtherance of the fruit growing industry in that province. Now we have a report of one of the first meetings of the Society, at which the Lieutenant Governor and other distinguished persons were present, and plans were laid for sending a trial shipment of apples to England in cold storage.

Hon. Senator Ferguson expressed his appreciation of the work and importance of the Association and declared it to be his firm conviction that Prince Edward Island is destined to rival Nova Scotia in the production of superior fruit. He had just returned from the Halifax exhibition, whither he had taken some 56 samples of Island apples—30 from his own small orchard; and he had expert authority for the statement that in size and bloom they compared favorably with the apples exhibited in Halifax. He was satisfied that with the adoption of the improved methods of the day as to spraying, we could easily fight the pests which menace our orchards For the first time he had this year sprayed his own orchard, following closely to the formula laid down in the Experimental Farm's report, and was happy to say with the most favorable results. Senator Ferguson then spoke of the necessity of producing those apples which will best suit the British markets. He said that in Nova Scotia orchardists were narrowing down instead of extending the list of varieties produced; and in effecting this the science of top grafting was being generally called into requisition, thus making use of the growth of trees producing unsuitable fruit. He spoke also of the importance of a proper package in which to ship our apples and the manner of filling these packages, declaring that "slack packed" apples were fatal to success. Color counted for much in the British market, and it was found by grafting on the Red Astracan, a superior bloom could be obtained for the superior varieties.

Mr. Wise, the Treasurer of the Association, having arrived submitted his report. The receipts, he stated, included besides the members' fees a grant of $150 from the government, which he had taken good care to secure before Mr. Warburton left office.

On motion of Father Burke, seconded by John Robertson, the thanks of the Association was accorded the government for having so far met the prayer of their former petition.

His Honor, Lieutenant Governor Howlan expressed his belief, as the result of a long experience, that Prince Edward Island could produce fruit second to none. He was glad that, as the result of judicious advocacy, we now possess a number of first-class orchards and was glad also to note a growing spirit of healthy emulation among the people of this Province. He had done his best upon every occasion to help the good work along. But the future generations only would reap the benefits of the work the Association has now done. He spoke of his interest in the trial shipment of apples and declared the necessity of making a judicious choice of varieties and of having them marketed in the best possible manner. He said that the British market was now our natural market. But the time might not be far distant when other countries would offer us still better inducements. He disagreed with Senator Ferguson as to the importance of color in the fruit, and said that he had but yesterday conversed with Rev. W. Hennebury, of Tasmania, who declared to him the color went for nothing in their market; but apples of medium size and superior flavor would always be saleable.

Senator Ferguson, Rev. A. E. Burke and others also addressed the Association upon matters connected with fruit production and marketing. The following resolution, moved by Rev. A. E. Burke and seconded by H. A. Stewart, Hamilton, was then put to the meeting and unanimously adopted.

Resolved that the Fruit Growers' Association of P. E. Island make a trial shipment of 100 barrels of apples to England by next trip of the cold storage steamer Lake Winnipeg.

The following report was then received and read :—

Your committee appointed to consider and report on the varieties of apples best adapted for shipment to England submit the following: Wealthy, 25 barrels; Alexanders, 25 barrels; Golden Russets, 25 barrels; and 25 barrels embracing equally Kings and Ribston Pippins. The above varieties we believe to constitute the best to send in cold storage as a trial shipment of 100 barrels. We would also recommend that the barrels made by Mr. Full, if said barrels are suitable, be procured for the shipment contemplated. We would also suggest that in packing said apples the greatest care should be exercised; supervision of packing by some capable person or persons would be absolutely necessary.

JOHN ROBERTSON,
D. A. SHARP,
RICHARD BURKE.

On motion of Senator Ferguson the following motion was then adopted :

Resolved. That the report be adopted and Northern Spy and Gravenstein be added to the list of apples recommended out of which a selection may be made.

Senator Ferguson, Marshfield; John Robertson, Inkerman; and D. A. Sharp, Summerside, were appointed packers for the Association. All matters in regard to the shipment are to be left in their hands.

We wish our Cousins good success in their efforts to export high grade apples, and would suggest that for fancy soft apples such as Alexanders, it would be better to adopt the package used by the Ontario shippers, which has been figured in Professor Robertson's report.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter or Post-Office Order are at our risk. Receipts will be acknowledged upon the Address Label.

ADVERTISING RATES quoted on application. Circulation, 5,000 copies per month.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

Notes and Comments.

GUMMING OF PEACH TWIGS. — Mr. John Craig, of Ithaca, N.Y., writes in American Gardening, that he has found the gumming to be associated with monilia fructigena, or grey rot; and he believes that the former is caused by the latter. He is of the opinion that both can be overcome by spraying.

TOMATOES FROM CANADA ought to succeed. We notice in the Green Grocer of London, an article saying that tomatoes in October were getting scarce, and worth from 3d. to 4d. a lb. These prices would give us excellent returns of about fifty cents for a twelve-quart basket, which would make tomato growing one of our best lines of fruit culture. We have not succeeded so far in getting tomatoes over in good condition. We have packed them too ripe. They should not be more than half red.

CANADIAN FRUIT IN LONDON.—Mr. A. W. Grindley, the agent in England, of the Department of Agriculture, says that Canadian consignments of pears and apples are reaching here in very satisfactory condition. Peaches, plums and tomatoes, however, have been gathered too ripe, the result being that most consignments have reached Bristol market in a more or less rotten condition. To a mere layman it appears surprising that Canadians have not before taken full advantage of the market here for fruit. Buying apples in the London streets from the hawkers' barrows, one has to pay a penny, or even three half pence for a good "eater," while good eating pears are usually ticketed 2d: yet farmers in Ontario in a good year feed eating apples fully equal to those I have mentioned to their pigs. Surely there is a means of getting such fruit on the London market in fair condition.

SEEDLING PEACH. — Mr. Frank Metcalf, Blyth, sent us samples of a yellow-flesh, freestone peach on the 17th of October, 1898. He writes "These are seedlings grown by a farmer here, who obtained first prize at the fair for them. Very few peaches can be successfully grown here. The tree is five or six years old, and is supposed to have come up from a Crawford pit. It seems to be perfectly hardy.

THE ANNUAL FLORAL EXHIBIT of the Hamilton Horticultural Society was held in the Tucket Factory, King St. W., on Tuesday and Wednesday, 15th and 16th November. The large plate glass front gave a fine display to the passers by and attracted a constant stream of visitors. The admission was free, and the flowers and a fine orchestra made the whole thing very attractive.

Among the exhibits we noticed a fine orange tree with a half dozen oranges, shown by Geo. Brown; a magnificent palm Phœnix rechinata, grown in his house in leaf mold by Mr. McCulloch, who also showed a choice collection of palms ferns and other house plants, all grown under ordinary conditions in his dwelling house. Mr. Alexander, the president, showed a fine collection of begonias, sedums, etc. Mr. Stipe, a well known Hamilton exhibitor, showed a large collection of fruit and vegetables; and large displays of plants, roses, Chrysanthemums, etc., were shown by some of the professional florists, as for example, Dale, of Brampton; W. Hull, of Hamilton, and Webster Bros, of Hamilton.

POT ROSES FOR EASTER,

Two-year-old Hybrid Perpetuals may be forced nicely for Easter if potted not much later than December 15th; the very strong growers, Margaret Dickson, Baroness Rothschild, Her Majesty, and such varieties are difficult to get into flower. The same may be said of the weak-wooded kinds, as L. Van Houtte and Earl of Dufferin. A. Colomb, John Hopper, La France, Aug. Guinnoiseau, General Jacqueminot, Mrs. John Laing, Ulrich Brunner, and Mme. C. Wood are kinds easily forced. Use 6, 7 or 8 inch pots according to size of roots, the soil if stiff, had better be loosened with some sharp sand, a good proportion of well rotted cow manure is needed to secure a good growth. Prune the canes back to three or four good eyes and let them start in a temperature of 40° to 45°. When the buds have become well swelled and the roots active, a temperature of 60° to 65° may be maintained. Give them the advantage of all the available sunlight and keep the foliage quite free from insects and mildew. Blighted foliage is never in harmony with even the finest blooms. The Hybrid Perpetual Roses will be a welcome addition to the conservatory decorations at the Easter season. If budded plants are used, see that "low budded" stock is procured, or you will have trouble to get the roots down into the pots.

WEBSTER BROS.

Hamilton, Ont.

Question Drawer.

Grapes: Select Varieties.

1037. SIR,—I want to plant a few grape vines in my garden here, and I would like to get your opinion on varieties. I would like to put in all three colors—red, white and black. Kindly send me the names in the order of your own preference, of three or four varieties of each color, mentioning whether they ripen early or late, and whether they are quite hardy and capable of resisting mildew. I want to get vines that have begun to bear, partly to have them true to name, and partly because I want them to bear soon.

WM. HOUSTON, *Toronto.*

In reply to your letter of the 25th inst., I would recommend the following list of grapes for planting at Toronto, black—Moore's Early, Concord, Wilder; white — Lady, Green Mountain, Niagara; Red—Lindley, Brighton, Delaware, Agawam, Salem. All these should succeed with you so far as hardiness is concerned, and in ordinary season all should ripen their fruit well. I have named them under each color in the order of ripening, and they will cover the grape season pretty fully. A few of them will keep for winter use, especially Lindley, Agawam and Salem, if kept at a temperature below 40° with plenty of ventilation.

I would not advise you to plant bearing vines, as they are liable to be stunted in removal. You should rather plant one year old vines which will suffer less in removal. These will come into bearing within two or three years. and give better satisfaction.

Open Letter.

Our Fruit at Omaha.

SIR,—We have received good specimens of fruit from British Columbia, Ontario and Nova Scotia. We received this week 3 bbls. from Mr. Starr, Nova Scotia, one bbl. of Gravensteins, half Red Banks, which were very fine. We made two pyramids of them, one of each kind. On the top we put two large apples, one of them the largest apple in the grounds, weighing 26 ounces and measuring 15 inches in circumference. The Oklahoma Exhibit has one larger around but not as heavy. Our large apple is a Chebucto Beauty from N. S. We have now about 200 square feet of surface covered with fruit, all fresh, making the largest, if not the finest collection on the grounds, which is a great surprise to a large number of people who think Canada is such a cold place that we cannot grow anything but ice-bergs. We have had intelligent-looking people tell us that they didn't believe we raised the fruit we are showing in Canada. Though they raise large quantities of apples here in the Western States they are way behind Canadian fruit for flavor. Nebraska prides herself as being the banner apple growing State of the West. This being the off-year for apples in the Western States she cannot make a very fine display; not half as good as she made at the opening of the Exposition with the crop of 1897, which were kept in cold storage and lasted until new fruit appeared. The Exhibit the Canadian Government made here has been a success. The object the Government had in making it was to attract settlers to the North-Western provinces, and it has, and will still further in the years to come, be the means of inducing thousands of good settlers to go there to make for themselves and their children good homes under the freest Government in the the world.

H. C. KNOWLTON.

Canadian Court,
International Hall,
Omaha.

Our Book Table.

Book Review.—The Evolution of our Native Fruits. L. H. Bailey. 472 pages. Pubs. MacMillan Co., N.Y. Price, $2.00.

To me this is one of the most fascinating sides of Horticultural investigation. The development of our native fruits has been so marvellously raging that men have forgotten the fact of the establishment in less than a century of an American pomology. Think of the growth of the grape industry, raspberry and strawberry culture, all due to the origination of varieties suited to American conditions, and almost wholly by the amelioration of the native types of these fruits.

Unfortunately the early history of fruit growing is in most countries wrapped in more or less obscurity. It has been the fashion in the past that which political and social events have been recorded with some precision and accuracy, the introduction of important agricultural and horticultural factors bearing upon the happiness and welfare of the human race have often being entirely overlooked unrecorded, and their influence thus underestimated.

Prof. Bailey has recorded in this volume the primary and fundamental steps of American Horticulture. He says that those motives run through the book: "An attempt to expound the progress of evolution in objects which are familiar and which have not yet been greatly modified by man; an effort to make a simple historical record from unexplored fields; a desire to suggest the treasures of experience and narrative which are a part of the development of agriculture and from which the explorer must one day bring material for history and inspiration for story."

The discussion is divided into nine captions:

1. The rise of the American grape.
2. The strange history of the mulberries.
3. The evolution of American plums and cherries.
4. The native apples.
5. The origin of American raspberry growing.
6. Evolution of blackberry and dewberry culture.
7. Various types of berry-like fruits, (including gooseberries, currants, juneberries, etc).
8. Various types of tree fruits, (including persimmons, thorn apple and nut fruits).
9. General remarks on the improvement of our native fruits.

Besides the historical value of the book, it marks some important botanical discoveries. The author says, "The prosecution of the study has demanded the consultation of original sources of information and has required much travel, including a visit to European herbaria in which the types of certain species of plants are deposited." Here then we have an inkling of the scientific value of this work. The botanical nomenclature of each of the groups of native fruits has been thoroughly examined and errors of synonomy and identity eliminated as far as possible. As an example he found that the botanical name commonly accepted as belonging to our native blackberry *Rubus Villosus* was given by the botanist Aiton to the common dewberry; on looking the whole matter over it transpired that the common high-bush cranberry was at present without a name to the scientific world. Thereupon Prof. Bailey named it *Nigrobaccus* (blackberries. A complete monograph of the wild raspberries with there cultivated varieties is given; in the same way the botany of the native grapes is worked over and brought up to date. I regard the evolution of our native fruits as Prof. Bailey's master-piece, although scientific and philosophical it is full of practical suggestions and the record of the past should prove inspiration and guide to our work in the future. Mechanically the book is gotten up in excellent form, with heavy, glossy paper, which records perfectly the numerous half-tone engravings, clear type and high class binding.

This volume now presented to the public represents a study covering a period of ten or more years. Prof. Bailey has evidently put into it his best thought and effort, and the result is such that it reflects the highest credit upon our leading writer on American Horticulture. J. C.

Book Review.—Bush-Fruits, by Fred. W. Card. Size 5 x 7 inches, pp. 537. Published by MacMillan & Co., N. Y. Price, $1.50.

This is an attempt to monograph, in a horticultural fashion, the raspberries, blackberries, dewberries, currants gooseberries and other bush like fruits. In giving these plants the name of bush-fruits, the author follows an English custom, which seems appropriate and more accurately descriptive than the common American equivalent of "small fruits"; this latter, however, has a broader application.

To describe the scope of the book is simply to define "a horticultural monograph." Does a grower, amateur or commercial, wish to know how to cultivate and market any class of these fruits? This volume will give him the best practical information to be had. Does he wish to learn the history of a new variety? A full account will be found here and brought down to Sept. 30, 1898. The enemies of bush-fruits are treated at length in a practical way. The book is not without interest to the botanist and mycologist, as considerable space is given to the affinities of wild species and their cultivated forms. The fungus enemies are classified in the same way, and will be of much value to the student and investigator. The insect enemies are treated in a like manner. The great value of the book lies in its completeness. After reading it and looking up the numerous references, one may feel that the subject has been thoroughly investigated. The book has been edited by Prof. Bailey, and is the first of a proposed series of monographs on the various types of American fruit. J. C.

Chrysanthemums.

With summer and sun behind you,
  With winter and shade before,
You crowd in your regal splendor,
  Through the autumn's closing door,
White as the snow that is coming,
  Red as the rose that is gone,
Gold as the heart of the lilies,
  Pink as the flush of the dawn,
Confident, winsome, stately,
  You throng in the wane of the year,
Trooping an army with banners
  When the leafless woods are sere.

Sweet is your breath as of spices
  From a far sea island blown;
Chaste your robes as of vestals
  Trimming their lamps alone.
Strong are your hearts, and sturdy
  The life that is root and stem
Smoulders and glows till it sparkles
  In each flowery diadem.
Nothing of bloom and odor
  Have your peerless legions lost,
Marching in fervent beauty
  To challenge the death-white frost.

So to the eye of sorrow
  Ye bring a flicker of light;
The cheek that was wan with illness
  Smiles at your faces bright.
The children laugh in greeting,
  And the dear old people say,
"Here are the self-same darlings
  We loved in our own young day,"
As summer and sun behind you,
  Winter and shade before,
You crowd in your regal splendor
  Through the autumn's closing door.

Margaret E. Sangster.